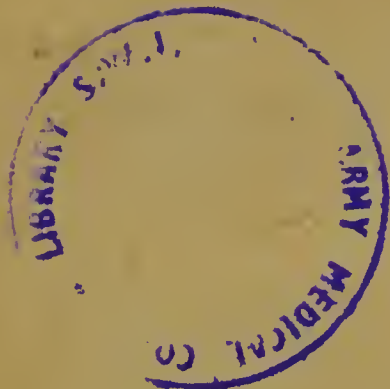


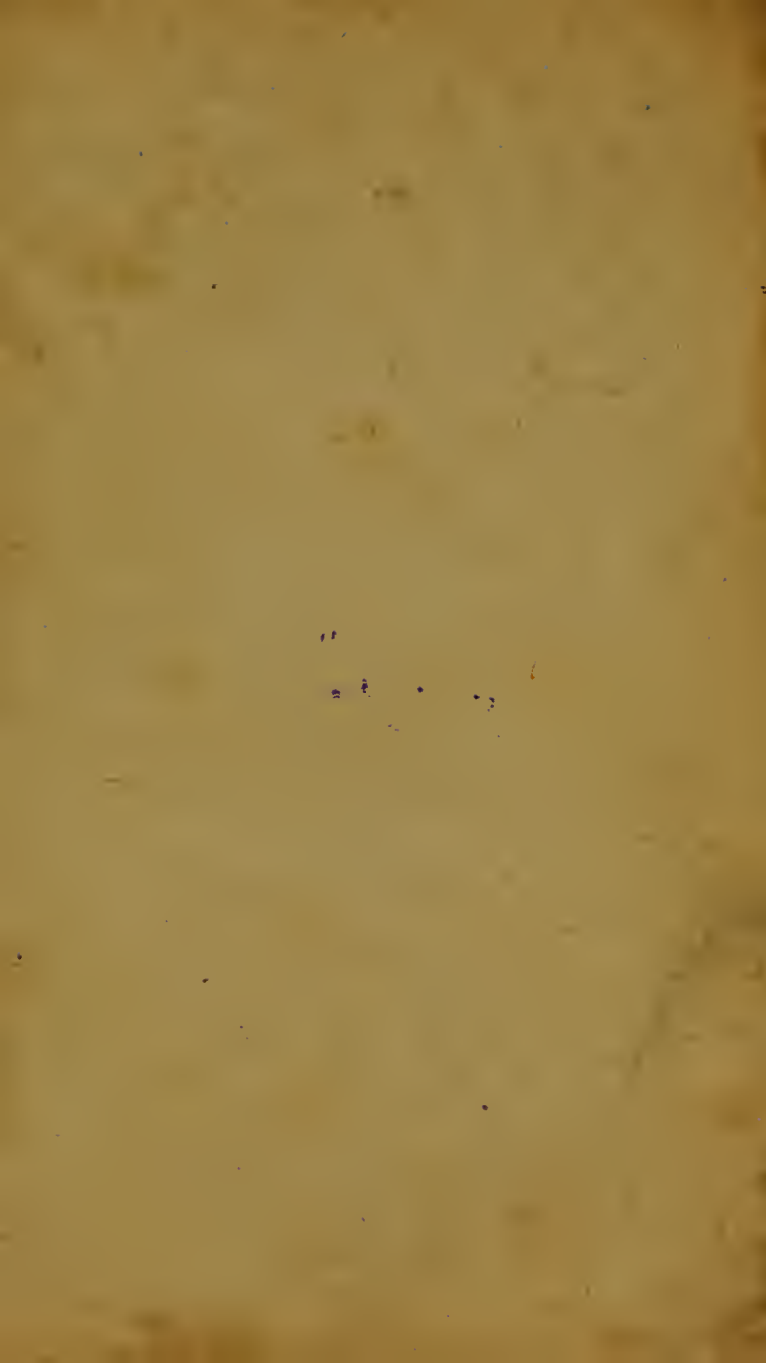


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T R E A T I S E  
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I N F L A M M A T I O N  
I N G E N E R A L ;

WITH ITS CAUSES, TERMINATIONS AND  
METHOD OF CURE,

Laid down in a plain and easy manner, in which  
the REMEDIES are shewn how to answer their  
different purposes.

---

By THOMAS HARRISON,  
SURGEON 18th LIGHT DRAGOONS.

---

D U B L I N :

PRINTED BY ROBERT RHAMES,  
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T. WEBB, N<sup>o</sup>. 25, SKINNER-ROW.

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M.DCC.LXXXV.

11<sup>19</sup> C. W. W. W. W.

her Book  
Liverpool

TO  
Sir JOHN PARNELL, Bart.  
KNIGHT OF THE SHIRE  
FOR THE  
QUEEN'S COUNTY;  
AND ONE OF THE  
CHIEF COMMISSIONERS  
OF HIS  
MAJESTY'S REVENUE.

DEDICATIONS in general are ascribed either for past Favors, or in expectation of future Services; with gratitude I acknowledge the former, nor am I ashamed to hope for the latter.

To you then I address the following sheets, that I might have

## DEDICATION.

an opportunity of publicly owning the many obligations I lie under to you, and to express my sense of your merit.

I SHALL not make a needless recital of those good qualities, which you are known so well to possess, lest what I should say, tho' strictly true, may be offensive, and have the appearance of flattery.

I am,

With the greatest sincerity,

Your most obliged and obedient

Humble Servant,

THOMAS HARRISON.



---

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## P R E F A C E

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P R E F A C E.

NOSOLOGISTS have divided inflammation into three classes; the *cutaneous*, or those affecting the external parts; *visceral* those which seize on the different bowels, of the three cavities of the body, and *articular* or those which attack the joints, these inflammations take their names from the different parts they fix on. As *phlegmon*, or every inflammation that affect the common integuments of parts entirely external, or that appear evidently to the sight, in all cases upon the surface

face of the body, and ophthalmia or those of the eye, and its membranes. Quinsy, and its varieties, where the tonsils, mucous membrane of the gullet, and the different parts of the throat are attacked, assuming a name from the respective parts affected. *Visceral*; as pleurisy or those situated in different parts of the pleura, or that membrane which surrounds the breast and its contents; Peripneumony or that affecting the lungs, Gastritis; or inflammation of the stomach; Enteritis of the intestines, hepatitis of the liver, and so on, being named from the bowel attacked. *Phrenetis* of the brain and its membranes. *Articular*, or those seizing on the joints, as rheumatism.

There

There are a considerable variety of inflammations that occur, according to the difference of the parts affected, but from dissections we know, that the circumstances which characterise the cutaneous or those externally that the same symptoms appear internally, and therefore that the same remedies must be applicable to the whole of them, only varying according to the appearances and symptoms of the inflamed part, and sagacity of the practitioners.

Of all diseases incident to the human body, there are none more frequent than inflammations, which I propose to treat of in the following treatise; and altho' these diseases have often been mentioned before by practitioners of ingenuity  
and

and eminence, yet still I apprehend the *proximate cause*, has been altogether mistaken, or not properly described, and therefore that the *cure* must still be on very precarious and uncertain grounds; for Celsus says †, “It is not to be imagined, that he should know the remedy of diseases, who knows not their original causes;” and the celebrated author of the commentaries on Boerhaave’s aphorisms remarks, \* “That a disease as an adequate effect, is the same with its compleat or proximate cause; the presence of which supposes its disease; and the absence its removal, and by knowing the proximate

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† Præfa. lib. 1, pag. 4.

\* Van Sweiten, Comment. Boer. Sect. 11 and 13.

“ cause,

“ cause, the proper means are discover-  
 “ ed for taking it away, for when I know  
 “ what causes the cold fit in a quartan  
 “ fever, I easily conclude what is to be  
 “ done to cure or at least to mitigate it.”

I could quote many more authors, to prove that the cure of diseases ever and always depends upon the knowledge of their proximate causes, notwithstanding what has been said by many to the contrary. These propose to collect the facts of physic, and apply them to practice without recording the proximate cause of diseases, thinking them superfluous and needless \*. That every such attempt is mistaken and ill judged and tends to corrupt the practice of

---

\* Synopsis Medicine de M. Lieutaud.

physic, will appear to every impartial enquirer.

In human nature there is a strong propensity to seek for causes, and assign them on the slightest grounds, there is nothing so weak as the reasonings of man often are, but the propensity is incorrigible: nay, those very persons altho' they propose to avoid the causes of disorders, yet they have recourse to them at last, for one of the first of these after considering the history of *hypochondriasis*, when he comes to the method of cure, says, "that the proximate cause  
 "depends upon either an increased vis-  
 "cidity, which may be resolved, or up-  
 "pon a certain inability of the nervous  
 "system which may be remedied,"  
 so



so that reasoning in phyfic is unavoidable.

As the knowledge of the proximate cause, not only of inflammatory diseases, but indeed of all others is so necessary to the cure, I think it incumbent on every practitioner, who thinks he can throw the least light on a subject so interesting to the science in particular, and the public in general, to offer his sentiments, and this I do the more readily, as I have practitioners of the greatest medical abilities, who support what I shall here advance; I do not presume nor have I the vanity to imagine, entirely to solve this matter, so as not to leave any difficulty behind, I only mean to make some nearer approaches, by shewing what  
is

P R E F A C E.

is both simple and evident, by which this difficulty may be solved by persons of greater medical abilities, and more experience than I have.

In these sheets I mean to treat of the history of inflammation in general, with all its consequences, in so doing I shall confine myself to the proximate cause, together with the various terminations of inflammation; afterwards I shall consider the prædisponent and remote causes, and when I come to the method of cure, I design to deliver one, from indications, formed from the proximate cause, and in this I shall shew how the remedies are adapted to produce the effects required.

This

P R E F A C E.

This then is the explanation of the following treatise, and tho' delivered, without these ornaments, or beauties of stile, which are so necessary to the decoration of any performance, (which I acknowledge myself unequal to) yet if what I shall advance be strictly conformable to reason and truth, and should I make it appear that in this I have done any thing, which may tend to the good of mankind, I hope I may be passed over by the learned and critical, without displeasure or reproach, which I shall consider as my greatest happiness.



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A  
T R E A T I S E  
O N  
I N F L A M M A T I O N S.

THE DEFINITION, OR CHARACTER.

IT is generally allowed now that an *increased impetus* of the blood in the vessels of the part, and commonly in the whole system, together with an increased *redness*, *pain*, and an increased *heat*, are the principal circumstances in the case of inflammation

mation \* and this has been the opinion of both ancient and modern physicians, thus Celsus says, † “ That the signs of inflammation are four, to wit, *redness, tumor, heat and pain,*” and Galen where he describes the nature of pulses, which accompany inflammatory diseases says, § “ that at the beginning of inflammation, “ the pulse is larger, stronger, swifter, and “ more frequent than according to nature, “ and when the inflammation is increased “ the pulse is also increased in these respects and becomes manifestly harder,” Boerhaave ‡ and all his followers have defined inflammation in this way, now having the ancients and moderns agreeing in the definition, I shall simply (and I hope) obviously account for these phenomena.

---

\* See Cullen's *Synopsis Nosologiæ Methodicæ* Ordo, ii. G. vii.

† Cul. Lib. iii. Cap. 10, p. 136.

§ D. *Pulsibus ad Tyrones* Cap. xii. tom. viii. p. 89.

‡ Aphorismi 381 and 382.

Prox-

## PROXIMATE CAUSE.

I believe there does not remain with any practitioner at present the least doubt but that the increased impetus of the blood is the principal circumstance in the case of inflammation, therefore I shall now enquire into the cause of this symptom.

The opinion which chiefly prevails at present is that of Dr. *Boerhaave*, and he has founded his mode of practice on the doctrine of obstruction, and he supposing it to take place in the case of inflammations, was the cause of the other phenomena † “ he says that an obstruction is “ a stoppage in a canal, denying a passage “ to the liquid that ought to pass thro’ it, “ which obstruction may arise from the

---

† See Aphorism 107, 108, 109 and 110.

See also Van Sweiten’s Commentaries on these Aphorisms.

“ narrowness of the vessel, by compression, or its own proper contraction, or by the viscosity of the fluid to be transmitted, or from both, by a concurrence of the causes of both.” So far he has given us his idea of obstruction, and when he comes to describe inflammation and its causes, he says † “ that it consists in a greater pressure and attrition of the red arterial blood, stagnating in the smallest vessels, and urged by the motion of the rest of the blood, which is more forcibly agitated by a fever, and this disorder may be seated in every part of the body in which there are reticular distributions of sanguiferous or lymphatic arteries; this stagnation is caused in the smallest arteries, first by every thing which contracts or diminishes the conical or cylindrical ends of the small vessels, in such a manner that their diameter or opening, becomes less than the

---

† See Aphorism 371, 373, 375, 377.

“ diameter



“ diameter of the blood globule, whether  
 “ this be done by pressure &c. Also by  
 “ every thing which causes the blood to  
 “ concrete or cohere together, such as  
 “ too great motion a consumption of the  
 “ thinner parts of the blood by sweats  
 “ to which may be added every thing that  
 “ coagulates the blood;” and further he  
 says, \* “ as often as these causes have pro-  
 “ duced this stagnation, in the small ves-  
 “ sels, then the blood moved by the re-  
 “ maining vis vitæ, produces certain ef-  
 “ fects or symptoms, which are at the  
 “ same time the proper signs of inflam-  
 “ mation.” And when he comes to ac-  
 count for the signs of inflammation, and  
 the cause of the *increased impetus* of the  
 blood, he says “ § that it proceeds from  
 “ an irritation of the fibres, and a swifter  
 “ course of the blood thro’ these vessels  
 “ that are open, (since it is returned by  
 “ the veins but obstructed in many of the

---

\* Aphor. 381. § Aphor. 382.

“arteries) from thence arise a quick pulse,  
 “fever, thirst, heat, watchings, weakness,  
 “and uneasiness,” From all which it is  
 manifest, that the *proximate cause* of inflammation (as Boerhaave thought) and which  
 ✕ is still supposed by many practitioners, to  
 be, either an *obstruction* of the small vessels,  
 or a *lensor* or *visciduity* of the fluids, or both.

This opinion of Boerhaave's however  
 simple, and so generally received, is now  
 by many, treated with a great deal of  
 doubt, as there is no proof of the exist-  
 ence of a *lensor* or *visciduity* in the fluids,  
 and as the *obstruction* is quite of a different-  
 nature from what he supposed, which I  
 hope to explain in a very clear and sim-  
 ple manner, in this I do not presume to  
 offer the least disparagement to Dr. Boer-  
 haave, for he was a man of the greatest  
 learning, he made more improvements  
 in physic, anatomy, chymistry, and bo-  
 tany, than any person who ever came be-  
 fore him, did; he gave a system as com-  
 plete as the state of knowledge then offer-  
 ed, but to suppose that it requires neither  
 correction

correction nor amendment, after so many discoveries and improvements that have been made since in science, belongs to a weak understanding.

Many have suggested various difficulties against the doctrine of Boerhaave in the case of inflammation, particularly Dr. Haller, a person remarkable for his experiments and observations; he observes “ that the motion of the blood \* in the “ extreme vessels of the human body is “ extremely slow, and of little force, therefore that an obstruction will not readily “ occur, with any effect, because, suppose, “ a vessel should be in its diameter so much “ diminished, as not to transmit these “ fluids that it used to do formerly, this “ will give no less an obstruction, nor will “ it produce any such effect; upon an “ hundred times have I seen with my “ microscope such an occurrence, a vessel some how or other so contracted, that

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\* Haller's prima linea.

“ the blood was stopped, but the effect  
“ was that it moved retrograde, and  
“ the impetus is so small, that it does  
“ not hinder the retrograde motion, which  
“ continues till it finds another branch  
“ going off, thro’ which it readily passes  
“ and for this purpose, nature has pro-  
“ vided an infinite number of anastomoses  
“ in the extreme vessels in order to ob-  
“ viate this obstruction, and therefore  
“ that any considerable disorder from the  
“ obstruction in one or more of these small  
“ vessels is not likely to take place.” Fur-  
ther this retrograde motion of the blood,  
is curiously described by Lieuenhock. †  
“ Having found a Bat, that was almost  
“ starved with hunger and cold, he ex-  
“ amined with his microscopes, the fine  
“ membrane which serves that animal in-  
“ stead of wings, but saw no motion ei-  
“ ther in an artery or vein; six hours af-  
“ ter the animal being somewhat revived,  
“ he observed a particle of blood which

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† See his *Experimenta et Contemplatio*, p. 205.

“ filled

“ filled the whole cavity of an artery, to  
“ be protruded thro’ it, and immediately  
“ driven back again, and thus continued  
“ moving, backwards and forwards, till  
“ at length it passed thro’ the extremities  
“ of the artery into the vein.” Van Sweiten  
himself acknowledges this, † “ That the  
“ impervious particles of the blood, are  
“ repelled back by the contraction of the  
“ artery at the instant when the heart does  
“ not act, and that soon after they are  
“ again propelled to the obstructed part  
“ of the artery, while the blood is sent  
“ forward by the systole of the heart,  
“ whence it is evident that the blood may  
“ run backward and forwards in the same  
“ vessel.”

That the arteries have a power of contraction is most certain, from their being composed of muscular fibres, and that every muscular fibre is excited to contraction, by being extended, is allowed

---

† See his Commentary on the 382 Aphorism.

by every Physiologist, and this continues as long as the extending power is applied, as soon as the blood is propelled by the systole of the heart, into the larger arteries, the motion is assisted and carried on by their contractility, and as soon as it enters into the small vessels, the power of the heart is entirely lost, from the many causes of retardation, wherefore the motion must still be carried on in these small vessels by their muscular contractility, the blood being the extending power.

Further, that obstruction (supposing it to take place) will not account for increased impetus is proved by the illustrious Haller, in proof of this he says, "in an hundred experiments, he had occasion to make, he applied three ligatures, upon the extremities of the small arteries, but in all the several instances, where the blood was interrupted in its motion, he never saw any thing like the symptom of inflammation coming on; \* and that considera-

ble arteries can be tied as in the case of Hemorrhages of various kinds, without inducing any other increased impetus, than what would have arisen from the wound that had been made, and we further know that in the case of Aneurisms, that they produce no considerable disorder in the system, and if there is any thing peculiar in the small arteries in every operation for the Aneurism a number of small arteries that run over the coats of the larger arteries are tied up, without any considerable inflammation.

Another cause which Dr. Boerhaave has assigned for the increased impetus in inflammation is “ That the blood being obstructed in many of the arteries, must move swifter in those vessels which are open, from whence arise a quick pulse, fever, &c.” † Van Sweiten, in this part of the aphorism, in his commentaries, and who it is expected would support the Doctor’s opinion, rejects this

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† See aphorism 382, the latter part.



as a cause of inflammation altogether. For he says “ \* that this cause will not “ be sufficient to increase the velocity of “ the humours so as to render it sensible “ to the physician, unless the affected “ part is so large, that the number of its “ impervious vessels will make a considerable difference, when compared with “ those that are left open, for if a thousandth part of the arteries are thus obstructed by an inflammation, the increased velocity required to move the blood through the rest of the open vessels “ seems to be scarce within the reach of “ observation. Another cause is therefore necessary to account for the frequent attendance or following of a fever after an inflammation, which fever we frequently observe, even when the inflammation is seated in but a very small part of the body, for thus a very violent fever often attends, when an inflammation is

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\* See his commentary on the 382 Aph. part 8.



“ seated in but a very small membrane,  
“ as for instance in the Paronychia or  
“ whitloe.” And a little further he re-  
marks: “ That a fever may arise from  
“ pain only, and for the same reason a  
“ violent fever accompanies the most  
“ painful inflammations, whereas an in-  
“ flammation is not often attended with a  
“ fever where there is little or no pain,  
“ whence it follows that the fever seems  
“ to arise chiefly from the irritation of  
“ the nervous fibres dispersed thro the in-  
“ flamed vessels and membranes, which  
“ are too violently stretched or pressed.”

That inflammation does not arise from obstruction stopping the free passage of the blood, we judge from hence, as long as the ligature occasioning the obstruction gives no irritation, it produces no symptom of increased impetus, or when the point of a very small thorn is thrust into a very sensible membrane, as under the nail, it is capable of producing a very considerable

rable swelling and inflammation over the whole arm and shoulder, and this certainly cannot be accounted for, from the obstruction occasioned in the small vessels of the part, but 'tis much more probably owing to this, considered as a stimulant, acting upon the sensible and moving fibres. In innumerable instances it is found that direct stimulants and acrid matters applied to the part are a frequent cause of inflammation, sure these cannot be considered as obstructing and thereby occasioning inflammation? It is more probable they act by irritating the muscular and moving fibres to contraction, and from the laws of the animal economy, the heart and arteries are excited to action to overcome that contraction, (which will be more fully shewn hereafter.) Van Sweiten that ornament to medicine, has adopted this supposition, and says (as I before have shewn), that the fever attending inflammation arises chiefly from the irritation of the nervous fibres, disposed

disposed thro' the inflamed vessels and membranes.

This increased impetus of the blood in the free vessels, because it is obstructed in others, is further confuted by *Sauvage*, for he says and has shewn, † “ That “ this is a false notion in Hydrostatics, “ for if the impelling force be the same, “ the blood will not move with more velocity in the free vessels, but on the contrary that it will move more slow,” and this he has confirmed by many experiments and observations. Wherefore having now shewn (from such respectable authorities) that an obstruction in the small vessels denying a passage to the circulating fluids is not the Proximate Cause of the increased impetus or fever, the principal symptom in inflammation, I shall next proceed to inquire into the other cause that has been offered, the *lensor* or *viscosity* of the blood.

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† See his *Theoria Inflammatoria*.

What gave occasion to Dr. Boerhaave and others to suppose a lentor or viscosity of the fluids; was the appearance of the *buffy coat* upon the blood in inflammatory diseases; but nothing is now more certain, than that this *buffy coat* upon the blood is a constant and natural part of it, with this difference, that in some cases it is more disposed to separate from the other parts of the blood, than in others.

In every inflammatory disease, there is a tension and rigidity of the moving fibres of the economy, particularly of the arterial system, and these by their embracing the blood more closely than what is natural for the animal economy, dispose this buffy coat to separate more freely in inflammatory diseases, and this is what is called by physicians the phlogystic diathesis, this crust has been observed to occur in the sound state, and therefore it is now agreed, that there is not the least occasion for supposing it a morbid substance.

Sydenham in his dissertation on pleurisy has taken notice of this appearance long since, and ingeniously acknowledges himself ignorant of it, he says † “ That “ if the blood flows ever so fast, yet if it “ does not flow horizontally from the “ open vein, but runs perpendicularly “ down the arm, this buffy coat will not “ appear,” and a little further he observes, “ that this crust will not appear, even “ tho’ the blood has been drawn in a full “ stream from the vein, provided it is but “ stirred round with the finger.”

Van Sweiten himself rejects this as a cause of inflammation, for in his commentaries on this aphorism of Boerhaaves, he says, \* “ That he has frequently observed, that the buffy coat has appeared in the blood of the most healthy persons, where there was not the least appearance of inflammation, and on the

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† See Swan's Sydenham, page 231.

\* Commentary on the 384 Aphorism.

“ contrarv, no such crust has been observ-  
 “ ed in some of the most violent inflamma-  
 “ tions, therefore the origin of this crust  
 “ appearing on the surface of the venal  
 “ blood, seems to be very obscure.

The blood when drawn from a vein seems to be one homogeneous mass, but by a spontaneous separation is found to be of different parts, which separation commonly proceeds in this manner; immediately after the blood is drawn out, it exhales a subtile vapour, by this exhalation it is found to have lost part of its weight, the matter thus exhaling is called the *halitus* of the blood, soon after it loses its fluidity, and concretes into one soft, gelatinous mass, this mass on cooling separates into a *serum*, and *cruor* or *crassamentum*; the *serum* is a yellowish transparent liquor quite mild, it feels unctuous between the fingers, and preserves its fluidity in the air, but if exposed to heat, it coagulates into a jelly similar to the white of an egg; the

*cruor* or *crassamentum* is that thick, red mass which subsides to the bottom of the vessel when cooling, and as it cools squeezes out the *serum*; if this *cruor* be laid upon a linen cloath, and water is poured upon it, the water washes off a red coloured part, and there remains a whitish consistent but soft and tough mass, this matter upon several occasions, both while the blood remains within the vessels, and when it is drawn out, spontaneously separates from the other parts of the blood; it is therefore a part constantly present in the blood, and not any morbid affection of it. Monsieur Senac, calls it the *coagulable lymph*, and others the *gluten* or size of the blood. It is this *gluten* which gives that firmness to the *crassamentum*, or blood, and it is a portion of this also which being dissolved in a saline watery fluid, which forms the *serum* of the blood, for if this *serum* be coagulated by heat, and then cut into minute pieces, there exudes from it a thin colourless fluid of a  
saline



saline taste, and leaves a coagulated part, which is quite insipid, and in all its properties resembles the *gluten* separated from the *crassamentum*.

To illustrate this more fully, if the blood be let from a vein in a full stream, and received into a narrow mouthed vessel and let it cool gradually, this *gluten* is formed on the surface like as if melted tallow was poured on it; for the red globules being heavier than the *gluten*, they fall to the bottom, and leave the *gluten* on the top, which cooling slowly cannot entangle the blood; but if the blood flows in a small or drilling stream, or if it is received into a shallow vessel, so that it quickly cools, then the *gluten* does not appear, as it entangles the blood before it separates into its different parts. When this appears on the surface of the blood of living animals, it is called the *buffy coat* or *inflammatory crust*; it was this appearance on the surface of the blood which  
lead



lead Dr. Boerhaave, and others after him to suppose it a morbid matter, and as its appearance generally happens in every inflammatory disease, (from the *phlogystic diathesis* at that time prevailing and from other circumstances concurring) he supposed it the *Proximate Cause*. For a moment I shall admit the supposition of such a *lensor* or viscosity, preternaturally subsisting in the mass of fluids, sure no person acquainted with the laws of the circulation can suppose, that this viscosity should only affect one particular part, and not produce an entire interruption of the circulation in the whole of the small vessels, therefore from what has been said; it is very reasonable to suppose that every impartial practitioner will entirely reject the supposition of a *lensor* or viscosity of our fluids to be the *Proximate Cause* of inflammation.

Having now endeavoured (simply and clearly) to shew, that neither an obstruction of the small vessels denying a free passage

passage to the fluids nor a sizziness of the blood, can be the cause of inflammation, shall next offer my sentiments on this subject, and first, I shall enquire into the Proximate Cause of the principal symptom, the impetus or febrile affection of the system.

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O F T H E

INCREASED IMPETUS.

I T is now agreed on by all Physiologists that the vessels in animal bodies are composed of muscular fibres and that these have a power inherent in them of contraction, \* this tendency to contract, necessarily supposes them in a state of extension beyond their natural or most contracted state, and in this state they are constantly kept by the fluids distending their cavities. Now as the contraction of

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\* See Cullen's Physiology, Sec. ii. Chap. ii. also, Gobii Phathology 167, 170.

Haller's Pri. Lin. 500.

a muscular fibre is excited by being extended, this extension proves a stimulus to its contraction, which remains as long as the stimulus continues to be applied, and in this manner all the functions of the animal economy are supported in a natural state.

This inherent power to contract in the muscular fibres, can be excited by certain applications, made either to the fibres themselves, or to the nerves connected with them, and in either case the effects are so exactly the same, that it must be allowed that the matter in the nerves, and the muscular fibres is of the same kind, † and that the muscular fibres are a continuation of the medullary substance of the brain and nerves; even Dr. Boerhaave himself, long since seems fully to be of this opinion, for he says, \* “That the

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† See Cullen's Physiology, Art. xcii.

\* See Boerhaave's Institu. Medi. 396.

“ muscular

“ muscular fibres are a very fine expansion, of the ultimate extremities of the smallest nerves deprived of their coats, hollow internally and of the same figure with the muscle, being filled with spirits or nervous juice, which juice is derived from its origin or fountain the brain and cerebellum into the nerve by the continual force of the heat.”

And in his explanation of this section he says, “ That every muscular fibre belongs only to the nerve; and therefore every muscle appears to be a continuation of the brain, cerebellum, and spinal marrow, and that there is a constant flux of nervous juice from these springs, into every point moving the muscle.” Tho’ the muscular fibres consist of the same kind of matter as that in the nerves, the latter shew no contractility, because they have not the peculiar organization of the former, but

C

wherein

wherein this peculiarity of organization consists, is not yet ascertained †.

This inherent power of contraction in the muscular fibres, may be further excited by various applications ; and when this contraction is greater than what is necessary to the due support of the animal functions, it proves a stimulus to the neighbouring vessels, and at length to the whole system, from the general connection and sympathy of the sensible and moving fibres, for when any power is applied to injure the action of the economy, (and when not carried too far) the stimulus thereby occasioned produces a reaction of the brain, or an increase of its energy, and this energy being determined to the heart and arteries, increases their action, and occasions a hot fit or an increased impetus, which increased im-

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† Cullen's Physiology, from 95 to 107.

petus continues as long as the stimulus exciting it subsists, that is, until the constriction on the extreme vessels be removed; it is this which constitutes the *Vis præservatrix et Medicatrix Naturæ*, so very famous in the schools of physic.

There is a state of constriction of the muscular fibres that is not disposed spontaneously to alternate, with relaxation, and in which the fibres do not easily yield to the extending powers, such a state of constriction is called a *spasm*, when ever this *spasm* takes place in the extreme vessels of any particular part, either by direct stimulants or any other acrid matter applied, the action and tone of these vessels are not only increased, but at length of the whole system; the heart and arteries being excited to action, by the laws of the economy to overcome that *spasm*; from hence it is most reasonable to think that the *Proximate Cause* of the increased impetus, or fever, the principal

C 2

symptom

symptom in inflammation, to be a *spasm* of the extreme vessels of a particular part, or of the entire, from the application of a stimulus.

Having now attempted to shew, that inflammation consists of a *spasm* of the extreme vessels excited by the application of a stimulus, and that in innumerable instances it is found that direct stimulants and acrid matter applied to the part may excite inflammation, the result is obvious. But in internal inflammation the application of such acrids, is neither evident, nor can it be well supported, and therefore I am disposed to have recourse to a stimulus of a different kind, a *plethoric state*, or *accumulation*, some degree of *distension*, in the vessels of the part.

As *distension* is allowed to be the stimulus that ordinarily supports the action of the arterial system, and as that is the constant  
and



and ordinary stimulus † any preternatural, or the smallest increased in degree, will prove a more considerable stimulus to the part to which it is immediately applied. This preternatural distension may be produced by either an increase of the fluids to the part, in consequence of various changes that may very readily occur in the determination of the system; if by any cause whatever any unusual quantity of fluids is determined into any particular part, it will soon occasion the circumstances of distension, or if the transmitting vessels are diminished in capacity, by any cause of constriction, this will make the ordinary afflux, the quantity usually transmitted, to have the same effect in distending the vessels, as if the quantity of fluids had been increased.

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† Cullen's Physiology 159 to 161.

Haller's Prima Linea. and

Gaubius's Pathology.

Here two concurring causes will very readily give the stimulating distension, and that this is commonly the case, we learn very clearly from rheumatism, which we find can be very readily produced from cold applied to the part, more especially if that part has its vessels while thus constricted, previously distended, either by increased heat or increased impetus, and therefore inflammation in no case will more readily happen, than when cold is applied to the body, otherwise previously heated, as for example, when the whole is in a moderate tepor, if then cold be applied to one particular part, as if a stream of cold air should blow on one shoulder, it will produce a constriction that may be considered as affecting the vessels previously distended by the heat, also where in any part of the body there are unusual constrictions, and then heat is applied, the increased impetus will produce pain and inflammation in the part, as in the case of fractures, callous old sores, persons liable

ble to chronic rheumatism, &c. The limbs are sensibly affected with the change of weather, from cold to warm, coming into a warm chamber, or the warmth of a bed; further it will be found that inflammations most readily occur, in parts liable to the circumstances mentioned that, are exposed to cold, and at the same time the increased afflux of fluids, as in the Coryza, where there a more copious determination to the mucous glands of the membranes of the nose, fauces, and bronchia, at the same time these parts, by the constant passage of air thro' them, in their over distended state, are affected by cold, and become frequently the seat of inflammation, the result of which is, that most of the inflammatory diseases that occur are either rheumatism, quinsy, or pulmonary.

In order to establish this more fully, I shall enquire into the cause of this pletho-

ric state or accumulation, some degree of distension in the vessels of the part, as the stimulus of the system. In explanation of this I must first observe, that in the stamina of an animal body, there is such a construction of parts, as makes a provision for some vessels receiving blood sooner than others, and for some vessels receiving it in larger proportions than others, and it is only in this way that it can be explained, what certainly happens, the unequal and successive evolutions of the different parts of the system. This successive evolution of the parts is sufficiently obvious, and as it must depend upon a different distribution of blood, so it must also depend upon the solids being particularly adapted to this, that there is a constitution, where these are made more or less yielding, so that they may be adapted to this and sometimes so exactly, so that there is no disorder or inequality in the determination of blood  
but

but what is suitable to the growth of the system, and this goes on even to a long life; however as nothing is perfect in the animal system, and no provision against such errors occurring in its course, and that both from faults in the original stamina, and very frequently from various accidents and circumstances occurring in the course of life, determining to a particular constriction and relaxation, and therefore that these arising must disturb, and do disturb the system, by constriction occurring at one place, a determination is forced to another, and by a relaxation happening in one place, while the other parts retain their ordinary resistance, a determination is thrown towards this particular place, and so from the one or other of these causes, whither from a fault in the original stamina, or accidental circumstances it will be easy to perceive, that accumulations and inflammations, must or are likely to occur in animal bodies; therefore it is easy to perceive that very

small changes in the state of the determination of the blood, may have the effects I speak of, and now I will endeavour to shew upon what these changes depend.

It is generally supposed that the vessels in animal bodies are always full, and are always in a state that may strictly be called plethoric, that is to say, that they are not only full, but are always so full, that if stretched beyond that degree of constriction, which they would fall into if left to themselves, they are always stretched beyond their natural state.

Nothing is more easy than to shew, that a certain degree of this fullness and tension is absolutely necessary to support the animal system, and to the due ballance of its several parts, were it not for this ballance the evolutions of the system would not take place, in the manner in fact we find it does, there must be a ballance and tension, that the more yielding  
parts,

parts, as they are formed by nature, should be more distended than others, and that other parts should have their resistance to that period of life that requires their dilatation, the body therefore strictly speaking is in a plethoric state, and it is only when it goes beyond a certain degree of that plethora, that it is to be considered as a disease.

When ever any degree of this morbid plethora occurs, that is, wherever the system is filled and stretched beyond what is necessary towards this ballance, then any occasional relaxation or constriction in particular parts, will have more power in changing the state of determination and its consequences.

I shall now further endeavour to explain this plethoric state or accumulation which occurs in animal bodies ; nature has found it necessary that animal bodies, should be  
begun,

begun, as I may say, in a very small bulk, but that it should proceed from that small to a large and considerable bulk, or at least relative to its first beginning; this in fact is founded chiefly on a considerable increase of the fluids it contains, it must be therefore owing to a plethora, to an accumulation of fluids, and a certain laxity of solids, readily yielding to this accumulation that the gradual procedure in bulk goes on, in consequence of lax, and very easily yielding fibres; and the accumulation of fluids or what may be called the plethoric state, has no morbid effects, because the solids are in that condition, of very readily and easily yielding not only to the increase of fluids, but to the growth of the body; but as soon as the solids increase in density, their resistance to further distension, necessarily follows, and when with a certain progress of the growth of the body, this density of the solids constantly increasing, has arrived at a certain length to yield less easily



ly to, the same causes of accumulation constantly going on, then the morbid plethora will be felt, as the solids, do not yield any further to the distending fluids, and this morbid accumulation, or plethoric state will be felt more exquisite and more considerable in its effects, in proportion as the animal arrives at this state of density of the solids, but this morbid state may occur at any period, and seems to depend upon a particular ballance that nature has established between certain parts of the system, for the purpose of the animal economy.

From hence it is evident, that an accumulation, or constriction of the vessels of any particular part from any occasional cause, will by altering the balance so necessary to the economy, produce a tension not only of the vessels particularly affected, but at length of the whole system, and by the tension operating

ing as a stimulus, produce the increased impetus with the other symptoms of inflammation.

Thus I am disposed to resolve that inflammation consists in some degree of distension, operating as a stimulus. With respect to acrid substances applied, they are seldom to be admitted, nor have we any evidence of their application in these inflammations, but I would by no means be understood to infer, that there are acrid matters deposited in various parts of the body, that may sometimes be the occasion of various inflammatory diseases, but these act as was before observed, by their stimulating the sensible and moving fibres, throwing them into spasmodic contractions, which are the principal irritation of the system.

From what has been said, it may easily be understood why distension proving a stimulus,

stimulus, is frequently attended with an encreased action of the part, but still this is not sufficiently satisfying, somewhat more must be taken into account, I think 'tis not enough to account for the constriction by the application of cold, but it is further necessary to suppose that the constriction produced is of the spasmodic kind, that there is more or less of spasm affecting the extreme vessels of the inflamed part, and I am more disposed to think that this takes place, as all considerable inflammations are attended with some degree of fever; now as a spasm on the extreme vessels is the principal cause of irritation of the system, \* the continuance of this spasm is the support of the fever, and as a spasm takes place in the case of every fever, it must also take place here, and that it does so, we have more certainly from hence, that inflammatory diseases begin like fevers with a cold fit,

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\* See Dr. Hoffman, Vol. i. page 305.

See also Senac in his 10th chap. de Calore.

how the production of cold, the formation of spasm, the re-action of the system, or increased impetus of the blood to overcome that spasm are accounted for? is very difficult in theory, we can only refer it to a general law of the animal economy, whereby it happens, that powers which have a tendency to hurt and destroy the system, often excite such motions, as are suited to obviate the effects of the noxious power, this effort is called the *Vis Medicatrix Naturæ* for the further explanation of which I refer you to *Gaubius's Pathology* †. We cannot perceive nor ever shall, the manner by which the several causes produce their effects, we can only perceive it to be the institution of our Maker, establishing a connection best suited to answer the purpose of the animal economy, and particularly to support the system, in a certain condition, and of averting what may hurt or destroy it. \*

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† From page 633 to 650.

\* See *Cullen's Physiology*, from Sec. 116 to 122.

We should never be so anxious to know how a thing happens, as what actually does happen, and this is generally more to our purpose, in the practice of medicine, we find that spasm is necessary to support the increased impetus or fever, and therefore we must suppose, that it will occur, when ever there is a debility as in the case of pure fever, or where constriction is, as in the case of inflammation.

On this head I have only further to observe, that it may be alledged that the increased impetus or febrile symptoms, do not constantly occur ; I allow the fever does not always occur, however the contrary is more frequently the case, it is the ordinary and obvious consequence of inflammation, in any particular part, to produce fever in the whole of the system; but we can further conceive, that in certain systems, from certain circumstances, as their being less irritable, the increased  
impetus

impetus is not always communicated, but this does not change any thing in the nature of the case, it will appear at least that where the general fever does not take place, there is an increased impetus in the vessels of the part, which is commonly perceived by a remarkable fullness and throbbing in the neighbouring vessels, a quantity of blood is determined to a certain part, and is not so easily transmitted as usual, from this a sense of difficulty arises, a re-action in the neighbouring vessels, and also in the vessels of the part, more generally than in the whole system, and this is attended with the circumstances of spasm, which certainly is present in every increased impetus. So far with respect to the Proximate Cause of the increased impetus, the principal symptom in inflammation. The next to be considered is the increased redness.

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OF THE  
INCREASED REDNESS.

THE redness of any part depends upon the colour of the globules of the blood, which are red, and the increased redness of a part may be therefore explained, either by these red globules passing into vessels that did not usually receive them, of which there are a number in every part of the body, or it may be supposed especially to be owing to a greater number of vessels that now receive these red globules, than received them before; Boerhaave says †, “ that from an

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† See Aphorism 382.

“ accumulation

“ accumulation of red globules of the  
“ blood, which is violently impelled into  
“ the vessels, arises a shining redness,” and  
again “ the lymphatic arteries which  
“ were before pellucid and invisible, do  
“ also suffer a distension and alteration in  
“ colour, and from hence an increase of  
“ colour of redness.”

Dr. Haller, and some others that are extremely averse to admit of these errors in the blood's circulation, maintain that the matter may be explained, by the vessels carrying red blood, only receiving the red blood in greater quantity, whereby these vessels are distended, and present the whole visible substance of a red colour.

The explanation of this colour will be made more easy, if we consider that the coats of the vessels are white and pellucid, and that they always interrupt the colour of the red blood, appearing fully thro'



thro' their very thin and clear coats. Whichever of these accounts is received, it makes little difference, because that both of them, either the increased quantity, or more especially the *error loci*, necessarily supposes the increased impetus in such vessels, the next symptom in the character to be taken notice of is the pain.

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OF THE

P A I N.

P A I N is more owing to an over distension, than to any other cause in our system, nothing therefore is more obvious, than that it is owing to an increased impetus of the blood; hence Boerhaave says, “ that the small vessels are so far “ distended, as to be near upon breaking “ their smallest fibres, from hence follow “ a pricking pain.” \*

Every vessel is made up (as was before observed), of muscular or nervous

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\* See Aphorism 382.

fibres, therefore, every thing which over distends their sides, or irritates them will distract their fibres, from which distension the idea of pain will arise, this is confirmed by Boerhaave, for in describing the causes of pain, he says, “ that the  
“ sense of pain arises when a nervous filament coming from the brain is so far  
“ extended, or otherwise disposed, as to  
“ be in danger of breaking, which pain is  
“ sharper, as the fibre is nearer to a rupture, and the milder, as the nerve approaches nearer to its natural tension.†”

Now as the common sensation, or spring of sense and motion originates from the brain, from which all the nerves arise, it is necessary that a free action or communication should subsist from the nerve to the brain, and from the brain to the nerve, for the due performance of the animal functions; and to avoid whatever may be destructive or injurious to the

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† See Aphorism 220 and 221.

economy, therefore any change made in the nerve, causes some change in the brain itself, and the change thus made in the brain, excites the idea of pain in the mind.

The wise creator and preserver of the universe, has implanted into the living man, an immaterial thinking substance, (if I may use the expression) or mind, this immaterial or thinking part of man is so connected with the material and corporeal part of him, particularly the nervous system, that any motions excited in the mind, give occasion to thought, and thought however occasioned, gives occasion to new motions in the nervous system, for the purpose of the economy, and of averting whatever might hurt or destroy it. Sydenham has elegantly described this connection between the mind and body, he says, “ as the body is composed of  
“ parts which are manifest to the senses,  
“ so doubtless the mind consists in a re-  
“ gular

“gular frame or make of spirits, which  
“is only the object of reason; and as  
“this last is so intimately united to the  
“habit of the body, it is more or less  
“disordered, according as the constituent  
“principles thereof, given us by nature,  
“are more or less firm ” †.

Hence it can easily be perceived that the idea of pain in the mind, will arise from an over distension of the vessels, and other circumstances implying an increased impetus, and that distension can be readily accounted for, as produced by such increased impetus. The same reason will apply to the increased heat of the part.

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† See Swan's Sydenham, page 376.

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O F T H E

I N C R E A S E D H E A T.

I Shall not attempt here to enter into the particular theory of heat, whether it is owing to mixture, or putrefaction, to the friction of the blood globules upon one another, or to a particular power upon the blood, by the fibres of the system, as the whole is ill supported. I am not attached to either of these suppositions, 'tis enough that it is known that an increased heat is attended with an increased impetus, I will not say that this is absolutely so, or that there may not occur heat without an increased impetus, but it is  
a rare

a rare and disputable occurrence, and the other happens so universally, and here where it is conjoined with other circumstances, it is not to be doubted, but that the increased heat is an evidence of the increased impetus of the blood, in the vessels of the inflamed part.

So far I offer my opinion concerning the Proximate Cause of the principal symptoms of inflammation, as expressed in the character, and which I shall now shortly sum up. I think I have made it sufficiently probable, that a spasm of the extreme vessels of the part from various irritations, to be the Proximate Cause of Inflammation, and that the spasm proves a stimulus to the sensorium, to the nervous system, in order to produce a reaction, and this by the laws of economy being determined to the heart and arteries, increases their action, and brings on their increased impetus, or febrile affection, in order to overcome the spasm

of the vessels of the inflamed part, which continues as long as the stimulus exciting it subsists; that is, until the spasm of the vessels be removed.

This leads me to think, that this spasm operates in two ways, for it both occasions a constriction of the extreme vessels, and likewise produces an irritation in the heart and arteries, in order to overcome that constriction, and therefore it must be supposed, that this spasm operates in these two ways, (that is) operates in different proportions, sometimes acting more strongly in producing the constriction, than in giving the irritation, or vice versa, which admits of a very useful application, for when the constriction is moderate, and the irritation considerable, the increased impetus or febrile affection is short, but on the contrary if the constriction be greater than the irritation, the febrile affection is long.

This



This may be reckoned an hypothesis, and it is never thought satisfactory, that an hypothesis serve to solve the phenomena, let me see if it will be found so in fact. I have frequently observed that an inflammation consists in an accumulation, or congestion of the blood, or other fluids, in one part, and this congestion proves a stimulus to the reaction of the brain; and this reaction being determined to the heart and arteries, increases their action, and brings on the increased impetus. This stimulus not only operates in this way, but it also produces some effect upon the arteries themselves, particularly increasing the tone of the muscular fibres, causing an increased contractility, in consequence of which stimuli, the vessels not only contract more strongly, but resist their fluids more strongly than usual, at all times embracing the blood more closely, and are in a more considerable degree of constriction; 'tis this disposition of the

D 3

arterial

arterial system, or increased tone of the vessels, which forms the phlogistic diathesis or inflammatory state so famous among physicians.

This tone of the vessels may be concluded from the hardness of the pulse, from the common causes which are observed occasioning it, which are stimulants applied directly to the arterial system, and from the cure which is effected by blood-letting, which operates always by inducing a relaxation of the arterial system, (as will be fully shewn when we come to this part of the method of cure) wherefore, if we find these marks of the hardness of the pulse, and that all stimuli are powerful in bringing on this diathesis, and that the means which take it off, are most powerful in relaxing the arterial system, there would be little doubt, but that this is owing to the increased tone of the vessels, and if this  
tone

tone of the vessels is in any measure mixed with the increased impetus, the spasm thence arising will give a greater constriction to the vessels, than irritation to the system, and consequently the solution will be more difficult; in short, whenever the spasm producing the increased impetus, is of such a nature as to produce the phlogystic diathesis, it will give an inflammation of a more difficult solution; provided the irritation be not greater than the constriction.

Thus I have endeavoured to explain the Proximate Cause of Inflammation, as it is in a state of vigor. I shall next consider its various terminations, as they are frequent, and may be considered as succeeding each other, and this has been long ago observed by physicians to be by either *resolution*, *suppuration*, *gangrene*, *sphacelus* and *scirrhus*, &c.

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OF THE  
TERMINATION OF INFLAMMATION,  
By RESOLUTION.

WITH regard to the termination of inflammation by resolution, it will be sufficiently obvious, that if the distension or spasm yields to the increased impetus of the fluids, and that these will pass on with their usual velocity, the irritation will be removed, and the whole will return to its usual course, and so the inflammation terminates by resolution, this is the general supposed opinion of inflammation terminating by resolution. However I believe, and suppose 'tis extremely seldom that

that the matter proceeds exactly in this way ; I do suppose that the more common course is this, that the increased impetus here arising, has the effect of producing an effusion into the surrounding cellular texture, in which vessels the inflammation is seated, whether in the strictly membranous part, or only in vessels passing thro the cellular texture, is of little consequence, that in consequence of this increased impetus, the ordinary halitus is poured out in an unusual quantity, and there is reason to believe that in many cases those exhalents, allowing a larger effusion, do relieve the otherwise distended vessels, and give a solution to the spasm, which arises from over distension, in consequence of which effusion, the disease ceases.

*Tumor* is a frequent circumstance in inflammations, and where it does occur, it is said to be owing merely to the ves-

sels being distended, hence Boerhaave says, “ The minute and scarce visible  
“ vessels (arteries) are now enlarged by the  
“ distending blood, and from hence a red  
“ tumour.\* ” But I apprehend this will not account for a considerable tumor, that so frequently occurs, the tumor is really owing to the effusion I have just mentioned, to the unnatural quantity of matter exhaled or poured out into the cellular texture. In many cases it has been found necessary to cut into these parts, and evident marks of effusion have been found. In the case of effusion, if the matter effused is such, as can be again readily absorbed ; this re-absorption again takes place, and no violence happens to the parts, no destruction of texture, in this case the inflammation ends by resolution: But if it should happen that the matter effused is different from the ordinary halitus, as it cannot readily be

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\* Aphorism 382.

abforbed, or is of fuch a nature, that in confequence of ftagnation, it is changed into what may be called a preternatural fluid, fuch as that called *pus*, the inflammation terminating in this way, is faid to terminate by fuppuration which is the fecond exit of inflammation that I mentioned.

B Y

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B Y

S U P P U R A T I O N

'T I L L very lately, physicians have been puzzled in accounting for the formation of the *pus*, and many learned dissertations have been published, but with no satisfaction; what has appeared such a mystery has lately been discovered by Dr. Gauber, \* a person of perseverance in his enquiries, he has explained the matter so clearly and fully, that I need not enter into it with any great minuteness. His experiments shew that the natural *serum* of the blood in the sound and healthy

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\* See Gauber's Miscellanaries of Turin.



state of the human body, does always contain a portion of matter, and in consequence of stagnation, and a peculiar fermentation taking place, is converted into pus, in every appearance resembling the pus that is produced in abscesses, as exactly as can be possibly required, his experiments go further, and render it very certain, that this matter that is converted into pus, is, that portion of the *gluten* or *coagulable lymph*, (so called by Senac) which in part is constantly dissolved in the *serum* of the blood.

The application I would make to distinguish these different terminations of inflammation, either by resolution or supuration is this ; I suppose that it will appear obvious to every unprejudiced enquirer, from what has been said, that if the halitus is very little impregnated with the *gluten* or *coagulable lymph*, and is not in such a quantity, as to be readily changed into pus, either by heat or stagnation, while

while on the one hand from the state of the economy, it is fit for re-absorption, which readily takes place, it admits of the resolution formerly mentioned ; but on the other hand while the nature of the effusion is different, when it comes to the nature of the scum, we find that this is capable to be changed and that it is readily disposed by heat and stagnation to be changed into *pus*, and as in this state it is not so readily fit for absorption, the consequence must be suppuration.

These different states of effusion are generally referred to the state of the vessels, that they are more or less relaxed or distended, or it may be also owing to an increased impetus.

That the first circumstance the relaxed state of the vessels takes place, I am disposed to believe from hence, that every  
effusion

effusion is attended with a fuller and larger pulsation of the arteries of the part, with that throbbing pulsation which we know to be the mark of suppuration, proceeding in an inflamed part, the effusion relaxing the vessels, and taking off the distension that was the cause of the irritation, whereby the tone of the part is relaxed, and returns to its ordinary state. This can be further illustrated in the case of sweating, whenever that proceeds in a free manner, we then presume a dilatation of the extreme vessels, the pulse in proportion becomes larger and fuller, and the same circumstances occur in the case of the hemorrhages, upon the yielding of the vessels and the flowing of the blood, the pulse is manifestly fuller, and approaches to that throbbing pulse in suppuration; so that there is great reason to suppose that it is owing partly to the tone of the vessels yielding.

Secondly,

Secondly, that effusion may be owing to an increased impetus, I have no doubt but that this also takes place in inflammations proceeding to suppuration, for it is very common for the state of suppuration to be attended with frequent horror, with other symptoms of a cold fit, and a tremor; now as a cold fit in fevers, is generally supposed as part of the re-action of the system, this necessarily induces a spasm, which has been already shewn is a stimulus to the arterial system. This increased impetus not only produces a dilatation of the ordinary orifices, but actually produces a rupture of many parts of the vessels, there is a very strong foundation for this supposition, for we find in suppuration, the texture of the part in which the pus is collected, entirely destroyed, the extremities of the vessels and cellular texture, manifestly broke down, and intermixed with pus, and therefore there is room for this supposition, that the formation of the pus is always  
owing

owing to ruptured vessels, as the pus of abscesses is analogous to that of wounds.

On the different states of effusion which I have just referred to, I think it may be further illustrated by considering the phenomena of wounds, that in consequence of wounds, or vessels being cut through, while at the same time there is no increased impetus affecting the vessels of the part, these contract very close, and stop the further effusion of blood, so that for some time the whole remains in a dry state, but by degrees an oozing takes place from the extremities of the dry vessels of a thin fluid, or perhaps the ordinary halitus of the part gives the same appearance, of a thin exudation from it, nor does this halitus occur, 'till in consequence of some constriction operating, gives occasion to some distension, which proves a stimulus to the arterial system, and brings on an increased impetus which produces a formal

mal inflammation upon the part, and it is in consequence of that inflammation that is produced by the increased impetus, that pus is formed in wounds, for a further illustration of this, consult the accurate and elegant account in the aphorisms of Boerhaave\*.

When suppuration proceeds to a higher degree, to the entire destruction of the tone and texture of the part, when inflammation goes to such a length, 'tis said to terminate by gangrene and sphacelus.

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\* See his Aphorisms from 147 to 159.

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B Y

## GANGRENE AND SPHACELUS.

THIS change has been explained several ways, it is commonly supposed that it attends the highest degree of inflammation, and therefore the greatest increase of impetus that can occur in the part, this impetus operates by the effusion of the grossest matter, the vessels by anastomoses or rupture pouring out the whole of the fluids circulating in the extreme vessels, and by pouring out the red blood, in considerable quantity, these tend to run into putrefaction, so Boerhaave says,  
“ When

“ When the symptoms of inflammation  
“ are violent, and the small vessels sud-  
“ denly burst open, their juices become  
“ putrified, whereupon follows the death  
“ of the part affected †.” So that gan-  
grene may be owing to the nature of the  
effusion of a matter that is disposed to  
putrefaction, and not properly to purulen-  
cy. With respect to this supposition,  
that merely the effusion of red globules,  
is sufficient to determine to putrefaction,  
I think a considerable difficulty from a  
common fact that occurs, that is, in  
the case of ecchymosis in consequence of  
contusions, we are certain there is an ef-  
fusion, and a quantity of red globules  
are poured out in the cellular texture, and  
we have several instances of such effusi-  
ons subsisting for a length of time; and  
yet afterwards, reabsorbed without any  
putrefaction or destruction of the part.  
Wherefore I do think that an effusion of

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† See Aphorism 388.



the fluids, are not sufficient to produce gangrene, without some other cause having a share in this matter, and this I suppose to be a loss of tone in the vessels of the part, for the least degree of Atonia taking place, will be sufficiently powerful to carry on this putrefaction, which is demonstrable from the operation of the Jesuit's bark in stopping it.

There is not a more common cause of gangrene, than intense cold applied to the part, and this can no otherwise be explained, than by its destroying the nervous power, and therefore all vital tone in the part, and there are many other proofs of the loss of tone having the same effect in producing gangrene, as in palsy, in parts affected with a considerable degree of œdema and anasarca, which are manifestly with a loss of tone; it is therefore very probable that this loss of tone is the foundation of the change into gangrene, and

and 'tis not necessary even to suppose, even an effusion, for the stagnation of the whole mass of fluids in the vessels may be attended with the same putrefaction.

There are two degrees of this putrefaction, gangrene and sphacelus, the gangrene often changes into the sphacelus, but what are the precise limits between them, is not well determined, whether merely in the higher degree of putrefaction, or that in the one case, the putrefaction is confined to the fluids within the vessels and cellular texture, but that it has not as yet gone so far as to effect the solid parts, or whether in the case of perfect sphacelus not only the fluids are undistinguishable producing a most subtle poison, that not only affects the neighbouring parts, but soon the sensorium commune, and thereby the whole of the nervous system.

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B Y

S C H I R R H U S.

IT is commonly said, that this termination only occurs in glandular parts, and is a peculiar consequence of the circumstances of these parts, in which there is a slow motion of the blood, and less action in the containing vessels than in the circulating system. It is very uncertain if schirrus should be the consequence of inflammation, for there are innumerable instances of schirri occurring without any previous inflammation, and therefore inflammation is not necessary to form schirri. I do suppose that when they follow inflammation, other cases must concur,

cur, and that inflammation only excites these causes; there are many doubts upon this subject but to discuss the matter, would lead me into the various causes of schirri, which as they are not otherwise connected with the history of inflammation, I must here omit.

Besides the various terminations of inflammation already mentioned, I have one observation to make, that there is a termination, which till very lately has not been taken notice of, and is still but very little known, that is, when the state of inflammation is in, or near to what *Physiologists* call, Lax cellular texture.

## E F F U S I O N.

THE ordinary consequence of inflammation is to produce various effusions, but when the increased impetus occasions an effusion of a portion of the whole mass of circulating fluids, that are not changed by putrefaction, but immediately by their bulk and quantity, stop the circulation actually in the part, and destroy the functions of it, as sometimes happens in peripneumony, that such an effusion is made as interrupts intirely the transmission of the blood thro' the lungs, so as immediately to prove fatal, and that without any change in the fluids.

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themselves, and that this is the most fatal case of peripneumony, has been proved by dissection †; and by much the most frequent. This effusion is sometimes firoous, or nearly so, with little of red blood, but from dissection it appears that the most common case is absolutely a considerable effusion of the common mass of blood, and therefore a very large portion of the red globules. When this happens to any considerable degree and suddenly, it must obviously produce suffocation and death. We know it to happen especially from all the symptoms of a great effusion; there are great dyspnea, anxiety, and difficulty of breathing, and particularly where the difficulty of breathing constantly requires an erect posture of the patient, and where that is attended with a considerable turgescence of the face, which is a necessary consequence

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† See Morgani, and Lieutand's Dissections on these Disorders.

of

of a considerable resistance thro' the lungs.

Besides these terminations in different inflammations, the antients and some of the moderns have marked a great variety of other modes and conditions, of the terminations of inflammations, as by an *hemorrhagy* from the nose or hemorrhoidal vessels; and such a determination can be readily believed as possible, in the same manner as by artificial blood-letting. By *urine* or *stool*, very often the resolution of inflammation is attended with a remarkable change, in the state of the urine; but we cannot suppose that any morbid matter is secreted here; this appearance in the urine only shews a solution of the spasm. By *sweat* which is the most common and frequent termination of inflammation, which has been fully taken notice of by Dr. Cleghorn †, who also mentions.

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† See his Diseases of Minorca.

a variety of circumstances where inflammations of the brain, angina, abdominal viscera, and various erysipalalous and phlegmonic inflammations, of external parts, shift from one part to another, forming *abscesses* there; one thing particularly to be noticed in this way, is that the chief circumstances in all inflammations, whether universally or topically is the *phlogystic diathesis*, that is communicated to the system, and it may be questioned whether or not, this phlogystic diathesis is not the fundamental disease, and its affecting particular parts an occasional or accidental circumstance, and its determination or translation to one or other of the parts of the body, is merely accidental and various.

Having now considered inflammation in all its terminations as noticed by either the antients or moderns, I shall next consider the Prædisponent Cause.



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## PRÆDISPONENT CAUSE.

THE Prædisponent cause of inflammations, is always a certain degree of vigor and rigidity in the system, persons of the most robust habits of a sanguine plethoric constitution, also those that lead luxurious lives, and sedentary, are the most liable to inflammations, for persons of this temperament are very irritable, and as the vessels are ever distended with fluids, the least stimulus applied will throw them into contractions, and bring on the phlogystic diathesis or inflammatory state. It is further known that the inflammatory disposition is given at a particular

ticular time by the coldness of the season, or climate, or the stoppage of accustomed evacuations or critical discharges, by too much indulgence in sleep, by every thing that induces a plethoric state, or fullness in the vessels, as full eating and drinking &c. also by cold applied directly to the part, acrid stimuli, and sometimes by the use of Tonic medicines, and from these causes it may be presumed certainly that the prædisponent cause of inflammation depends upon an increased constriction. This tension of the system will further appear from the increased heat, with manifest marks of a great degree of constriction in the arteries, expressed by the hardness of the pulse, and in the last place, I infer that inflammation is of this nature from the cure of it, which is by various means of relaxation, the chief and principal of which is blood letting, which is well known, operates by relaxing the arterial system, our next consideration is the remote cause.

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T H E

R E M O T E   C A U S E.

VERY little can be said under this head, as most of the causes of inflammation have been already considered in the explanation of the proximate cause, but as there are some that still furnishes subjects that may be matter of curious enquiry, I shall offer them under the four following heads.

The first cause that may be referred to, are certain *acrid substances* applied to the part, the whole train of external *stimulants* and *rubifacientia*, necessary belong to this head, and it will be as readily

perceived that the application of *heat*, when to the degree of producing inflammation, begins to be considered as the application of an acrid.

At what precise degree of heat inflammation begins is a little difficult to determine, it may be pretty constantly determined at, at least 120 of Farenheit's thermometer, (tho' that degree may vary according to the sensibility of the subject) certainly lower degrees of heat has this effect, it has been common to suppose, that when it does not exceed the real human heat, which is 98 degrees, no inflammatory state will follow, nay many people will bear the temporary application of 112, and in many diseases, the heat of the body rises to that degree, without any marks of inflammation. Heat that goes from 112 to 126 of Farenheit's scale, (for that is the thermometer we calculate from) commonly produces inflammation, and any degree above this will destroy  
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the whole texture of the parts, and produce an eschar similar to the actual cautery.

The second head of external causes is the application of *cold*, as heat has its limits, so here the intensity of cold is to be considered to that degree below the freezing point, or 30 degrees of Fahrenheit's thermometer. How *cold* operates I will not pretend positively to say, I think there are difficulties attending every theory that has been proposed, but shall only consider the fact, and shall only observe that every intense degree of cold, that does not immediately produce gangrene, stupefying the part, and stopping all the motions of the fluids, every degree of cold within, that operates in the way of producing inflammation, sometimes recoverable, sometimes not without the gangrenous state coming on ; for a further illustration of this consult Boerhaave, and

his commentator Van Sweiten ‡, where this subject is fully treated.

The third head of external causes is that of external violence, such as *wounding, bruising*, or over *stretching* the parts, there is no difficulty in proving, that the operation of these powers act in producing inflammation, by their irritating the sensible and moving fibres of the system, to contraction, for from various observations, we are convinced that the most violent inflammation, and the most excruciating pains may arise barely from a distension of the nervous fibres, consult Van Sweiten further on this head †. The same will also apply to the

Fourth head, *Extraneous Bodies*, tho' neither of an acrid quality nor of a pointed form, or otherwise, particularly suited to mechanical irritation, but accidentally

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‡ See Aphorism 375.

† See Commentary, 162 and 163, on wounds.  
lodged

lodged in any part, of the body, are a frequent cause of inflammation, 'tis true there are some objections to this cause, and Van Sweiten mentions one of a. turner, who had a piece of wood lodged in his thumb and fore-fingers for six years, where it might be felt without giving any great uneasiness or disturbance to him in his daily labour †. And I know a gentleman of veracity who informed me that he had a large splinter of wood, between the radius and ulna in his wrist, for several years without any inconvenience or pain, supposing it to be a ruptured tendon; but on his using some violent exertion, the splinter burst out, at which time he recollected when a boy, to have received it by accident there. But the more common consequence of extraneous bodies, is their giving such irritations as to produce inflammations and suppuration around them, which is a wise contrivance of nature, as this is

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† Commentary 375,

the way by which she endeavours to throw out such extraneous bodies.

So far with respect to extraneous causes, but with respect to the production of internal inflammation these can not be very well applied, 'tis certain that the application of acrid matter, and sometimes the application of external violence, have a share in producing the internal inflammations, but quite separate from this I imagine there are causes that more commonly operate, the concurrence of *distension* and *constriction*, (as I have shewn before in the explication of the proximate cause.) Any increased afflux of fluids to the part, while at the same time, cold is applied to it, nay I do think, but that the increased afflux (without the application of cold) solely may be the cause of inflammation, but with regard to the concurrence of cold, and at the same time the increased afflux being the cause frequently ; we have the most clear proof, as in  
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the rheumatism, and we have the same very distinctly in the case of quinsy, and and 'tis to be presumed, in the several pulmonary inflammations, this combination holds good.

Having now considered inflammation, with its causes and terminations, I shall proceed to the consideration of the method of cure.

#### METHOD

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## METHOD OF CURE.

THE cure of inflammation whether external or internal, is that we should endeavour to resolve it, 'tis but an imperfect cure, where we allow it to terminate in another disease, so this is the intention that is first to be considered.

The means of procuring this resolution is, First, To diminish the increased action of the heart and arteries, or force of circulation, and particularly taking off the increased impetus in the vessels of the parts; by the antiphlogistic regimen, blood letting, purging, refrigerants.

II. By removing the spasm that affect the extreme vessels, and take off the determination

mination to the part inflamed. By topical blood-letting, warm bathing, blisters, mild emetics, repellents and opiates.

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### ANTIPHLOGYSTIC REGIMEN.

THE First means of taking off the increased impetus, is by the *antiphlogystic regimen*, that is the avoiding as much as possible every irritation that subsists or can occasionally arise in the system.

By irritation I do not mean to speak of the various external occasional and accidental causes of irritation, which occur from the ordinary business and actions of life, and are unavoidably applied to the system. Our system is not a mere automaton, nor supported in its duration, by any powers of mind or body, subsisting within itself, it appears that we have constant need of some external assistance,  
of

of external impressions, and if these could be removed, we would not only certainly fall asleep, but also very soon become dead. The energy of the brain (which is properly the vital substance), does depend upon other certain exercises and functions of the animal economy, and both together certainly depend upon the power of external impressions; therefore some degree of irritation, applied to our system is unavoidable\*. But when it is attended with the excess of stimulant power, (as in fevers) 'tis then our business to render this unavoidable irritation as moderate as possible, and to this the title of regimen is properly applied, therefore the avoiding of irritation in fevers is properly called the antiphlogystic regimen, because it is especially necessary to be applied in inflammatory cases, and should

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\* See Cullen's Physiology, Sec. ii art. xxxii. &c. to cxliv.

be one of the most universal remedies in these diseases.

I know that in common language (under this title,) every remedy that is used in inflammatory fevers, as bleeding, purging &c. is to be comprehended, but 'tis only applied with propriety so far as 'tis a regimen of the ordinary functions and exercises of life, or of things that are constantly and necessary to be applied, and which I shall mention under the following heads.

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## I. OF IMPRESSIONS.

THE avoiding of impressions and its consequences as *sensation, thought, passions* and *motions*, even external impressions, these impulses that are made upon our external organs of sense, if they are not the beginning of all motion, at least they are a considerable support to it, and the occasional cause of most of the changes  
that

that occur in the motions of the system†, they must therefore be powerful stimulants, but in whatever way they operate, if they are the cause of pain, or the cause of uneasiness, their stimulus in proportion to this is greater, so the uneasy impression of *touch* is to be removed, the body is to be laid in the softest and easiest manner, and exposed to no particular impression in its several contacts.

To follow the rest of the senses it will be obvious, that the strongest impressions of *taste* and *odour* are to be avoided, which is commonly easy to be done, as they are but very seldom present to such a degree as to be hurtful, but there are two others less easy to be avoided and more powerful, viz. the impressions made upon *sight* and *hearing*, we should diminish them to the utmost, so the first part, of our regimen is to enjoin *darkness* and *silence*.

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† Boerhaave's Inst. Medi. 581.

It will I think be obvious that the exercise of *thought* proves more or less a stimulus to the system, and 'tis next to an impossibility to suspend this operation, but we can avoid such impressions as engage the attention, or lend necessarily into a train of thinking altogether, our care should be to present objects that require the least attention, and have the least tendency to the prosecution of thought; the only way of doing this is by presenting some diversity, and such as are attended with little difficulty, as the intellectual operations are stimulant when they proceed to any emotion or passion of mind, these are to be avoided, and we can more certainly command these, than the diversity of thought, these are seemingly but simple circumstances, but none should be neglected, as they may be of more importance than may be imagined.

Beside these there are two other impressions, that are constant and unavoidable

able viz. the impressions of *cold* and *heat*, these may arise from different sources, they may be made by the contact of bodies of different kinds, but I shall not prosecute the matter through these diversities, I shall only attend to those which are made by the surrounding atmosphere.

In the beginning of all inflammatory diseases, the concurrent application of external cold, along with the causes operating within, increase the spasm that is formed upon the vessels of the inflamed part, and therefore in the first formation of inflammation, the concurrence of *cold* is extremely pernicious, it has the strongest tendency to produce the phlogystic diathesis in our systems, and it is the foundation in most cases of all inflammatory diseases, of pleurisy and peripneumony, quinsy, rheumatism, and catharrhal affections, and what it can produce it certainly can increase. During the first formation of inflammatory fever, so long  
as



as the sense of cold is a symptom, so long as any horror continues, or when these horrors are interposed by flushings, so long as the patient shows a disposition to shun, and is actually sensible of the sense of cold air, so long in the course of inflammation, is the external air to be avoided; but how to apply this in the progress, is more difficult, when the hot fit comes on, when the re-action of the system is fully established, and the accession is not with any degree of horror, then the cold air is not so much to be avoided, and then 'tis certainly the contrary impression of heat that is to be avoided.

*Heat* is the fundamental stimulus of our system, and is certainly the first vivifying power applied to it. The animal economy has certainly a power within itself of generating heat, to a certain degree, and it can not fall short, nor be much increased, without some prejudice to the system, this generating power of heat

heat in our bodies, has a constant relation, to the surrounding temperature of the air, and if the temperature be rendered warm by artificial heat as that of fire, or any other means as of our bed-cloaths, chambers, rendered warm, the prevention of the accumulated air, mixing with the pure cool air, all these external applications of heat, assist the generating power within us, and prove a stimulus and increase that heat occasioned by the inflammation. From these reasons the increase of heat is to be avoided, and considering the generating power to be increased from the inflammation, we should in order to obviate it, apply a degree of *cold*, to balance the greater increase of the generating power. I have no sort of doubt that the consideration is proper, and that a degree of cold is absolutely necessary in all inflammatory fevers, and we are sure from facts, that the application of cold is not only a safe but a proper remedy, but in what circumstances,  
and

and under what limitations must be left to the physician's discretion to judge.

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## II. OF MOTION.

THAT every *motion* of our bodies is a stimulus to the system, does not require to be proved, 'tis equally unnecessary to prove that these motions excited by the action of our muscles, are especially such stimuli, and it will follow in course, that this stimulus will be in greater proportion, as a greater number of muscles are employed and brought into action. It would be curious, (but 'tis here foreign to our purpose;) to explain in what manner muscular motion stimulates the system; every part of the muscular system of the body is connected, the tension of the whole is affected by the motion of every single fibre, and it is this motion that directly excites the blood \*, there-

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† See Cullen's Physiology, clvi to clxviii.

fore laying the body at ease and avoiding every sort of motion, and especially those affecting a great part of the body, is a necessary step. There is a motion which affects but a small part, and yet has a considerable effect upon the whole, that is the exercise of *speaking*, that may go on while the body is at rest, and which only a few muscles, that are concerned in the business of respiration, are employed, frequent respiration certainly occasions the quicker transmission of the blood thro' the lungs, and determines it more frequently towards the left ventricle of the heart, so is always a considerable and hurtful irritation: not to add the exercise of speaking, is not likely to be carried on without some train of thought, and without the danger of exciting various emotions of the mind, so that an absolute silence is very generally a proper measure.

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### III. OF ALIMENT.

THE exercise of digestion is constantly a stimulus to the system, and in some persons is often attended with a temporary fever, and in every person the frequency of the pulse is manifestly increased during the time of digestion. The ancients paid great attention to this, they enjoined a total abstinence in the beginning of fevers, and this practice was followed by many of the moderns; but I doubt if this was not an improper rule, if the appetite remains I should never think it dangerous to gratify it in some measure, I would rather think it an uneasy impression that is to be avoided, I would only in this case make a proper choice of the quality of the food. Our food is stimulant in proportion to its being more or less of an alkalescent nature, and upon that account, animal food gives

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more

more stimulus than the vegetable, but these circumstances may in a great measure, depend upon the solubility of it, the food that is more difficult of solution, is always the more difficult to digest. Our aliment is not only a stimulus as it suffers the several changes in the stomach, but as it goes further into the intestines, and there according to the quality of the nourishment it affords, to fill the vessels and stimulates them, and further according to the perspirability, or the longer or shorter time 'tis retained in the system.

In cases where a total abstinence is not necessary to enjoin, but to give some food according to the appetite, as the stomach will receive it, we should chuse to avoid the animal food entirely, which both by its alkalescency, nourishment, and perspirability is liable to prove stimulant, I would universally recommend the vegetable, and especially that which has its solubility in some measure increased by the preparation of it, for it is found that food,

as it is more or less solid or liquid, sooner undergoes the changes in the stomach, and the more liquid is sooner affected. Vegetable food taken from among the farinaceous, and given nearly in a liquid form, is the aliment that is not only the most admissible, but is generally used.

Under this head, the drink of our patients is to be considered. All sorts of drink that are stimulant to the system are to be avoided, therefore wine, fermented liquors, and spirits of all kinds, are to be forbid in general. The mildest liquors are the most proper, and so far as they can be made to answer the purpose of quenching thirst, they are to be preferred; there is one circumstance with regard to drink, that ought to be attended to, very often the thirst is such as to require a considerable quantity of drink to allay it, and this sudden throwing in of a considerable quantity of drink, is liable to be hurtful in filling the stomach and distending it, thereby preventing its ready evacuation



cuation, and affecting the respiration, which is a circumstance that should be attended to.

The antients strictly observed an abstinence in drink, as well as food, in the beginning of fevers; from such a practice of refusing drink, or giving it only in small quantities, I think may be attended with bad consequences, and thirst subsisting in inflammation, may prove a considerable stimulus to the system, therefore the sensation of thirst is to be gratified, and the stimulus which it occasions, is to be taken away, only in different circumstances, this may be managed different ways. In all inflammatory diseases cold drinks are extremely dangerous, and those drinks which are tepid, are most proper, they should be mild and diluent, and made gratefully acid, which very much conduces to allay thirst, but more of this under the head of refrigerants.

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That the tone of the system depends upon its tension, is as evident as any proposition in physiology, and the arterial system has its tone supported by its being in a state of tension constantly †, every increase of that tension, whether from the fluids distending the vessels, or from the contractility of the vessels themselves, gives necessarily an increased action, and therefore the taking of this tension, may be a principal means of taking off the effects of the excess of the stimulant power, whether this depends upon the quantity of the fluids, or diminished capacity of the vessels, it will be equally the same, if the fluids are moved with greater velocity, the tension of the vessels may be greater, and the chief means of diminishing the tension of the system, is by lessening the quantity of fluids passing into it.

The fluids may be lessened various ways, but I shall only consider these that are of

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† Gaubius's Physiology.

immediate efficacy, or any way considerable, these are by *blood-letting*, *purgings*, and *refrigerants*.

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## B L O O D - L E T T I N G .

T H I S is known to be an universal and by much the most powerful remedy in diminishing the action of the heart and arteries that we know of, and therefore is most frequently used in all inflammatory diseases. It is now clearly proved that the effects of blood-letting depends upon the sudden relaxation which it readily induces in our system, provided the blood be taken from a large orifice, and the quantity taken flows as it were at once, which has more effects than where it is taken from a small orifice, and the quantity takes some time to flow, agreeable to this it has been observed, that a small quantity taken from a large orifice, will  
have

have much more effect to relax, and take off the tension of the system, than a great deal more taken from a small orifice and for a length of time, this should be particularly attended to by practitioners, as the good effects of blood-letting in inflammations, especially depends on this one circumstance. At the time of blood-letting we should avoid the presence or concurrence of any kind of stimulus or irritation, it is common to bleed when a person is sitting, in which posture a great many muscles are exerted, which gives a considerable irritation, and therefore in some measure counteracts the intention of blood-letting, I would rather recommend it, to lay the patient in a horizontal or incumbent posture, to lay the body as much as possible at rest, to relax every muscle as much as possible, and in proportion to this the effects of blood-letting will be considerable, this is also practised with another view, to prevent a deliquium animi that is liable to come on.

So long as the symptoms of inflammation remain violent, and that the pulse is full, hard, and quick, where the heat of the body is increased with marks of turgescence, fullness of the countenance, and redness of the face, we should freely and repeatedly use blood-letting, or where the constitution, temperament, and habit of the body be plethoric, and our patient be full, young and vigorous ; this evacuation is the more necessary, I have to add further with regard to the circumstances, that determine the repetition of blood-letting, if it happens (as it often does), that the pulse is manifestly contracted and small, and persons whose habit and time of life should give a fuller pulse, that blood-letting strengthens the pulse, (as by relaxing the system) and allows it to become fuller and appear stronger, when this is observed, we should consider it as a proof of the propriety of blood-letting we have practised, and we repeat it with confidence.

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There is another circumstance to determine this, the appearance of the blood that is drawn out, if this is covered with a considerable inflammatory crust, this appearance not only authorizes blood-letting but encourages to a repetition of it. Many practitioners are too rash in concluding the absence of this inflammatory crust, or phlogystic diathesis when the blood shews no appearance of it, and on that account don't proceed, but this negative should be of no weight, for the crust depends upon many circumstances in drawing the blood, as the capacity of the vessel, the largeness of the orifice, the temperature of the air, all which circumstances, (tho' it might otherwise appear) will prevent its real and natural appearance, so that this, by itself, can hardly be a certain mark, and 'tis dangerous to conclude against the phlogystic diathesis being present, from its absence.

However, undoubtedly this useful operation has its limits, and tho' the excess of blood-letting may not immediately affect the system, yet in time it may be attended with many inconveniencies, several considerations render this obvious, and I imagine this matter is not properly attended to, shall therefore endeavour to explain it.

It is difficult to explain in what manner the fluids of animals are retained in their vessels, when we consider how many thousand outlets there are constantly open, but these are of such a size as not to admit every part of our fluids freely to pass, a certain portion of them is composed of such gross particles, as not easily to pass through these small extremities. The red globules of the blood are of such a size, and perhaps the coaguble lymph, as not to be fit to pass through the various excretories. It can therefore be easily understood, why these two substances, are  
constantly

constantly retained, but they are not only retained themselves, but by their viscosity they entangle in their pores a considerable portion of the thinner and more watery fluids, the effects of which is to moderate the secretion, and to prevent a considerable portion of our thinner fluids from running off, as they are otherwise disposed to do.

It is the gluten and red globules therefore that are the means of retaining the fluids in our vessels; but when blood is drawn often from a vessel, and that in any considerable quantity, the remaining fluids, or those thrown in will be of too great tenuity, and the whole will readily run off by the exhalents into the cellular texture, and therefore produce *anasarca*. It is well known that excessive hemorrhage and excessive bleedings will readily bring on such a complaint, 'tis true that the red globules and gluten may be supplied by our various aliments, but it is to  
be



be observed that the supply of these, require the more solid and nutritious part of our food, and often the want of appetite prevents those from being thrown in, and only admits of the thinner fluids, and further it is to be presumed, that the renewal of these nutritious parts will always depend upon a certain vigor in the various organs of digestion, and large blood-lettings not only weaken the tone of the system, but may proceed so far as to weaken the various assimilating organs, so as not to leave them in a condition, for renewing those necessary parts of the blood. In all these cases when the blood is extracted in a large quantity, and more than can be supplied from the ordinary nature of the economy, it must acquire that tenuity that will allow it to run off, by the various exhalents, This has been considered as the consequence of inflammations when it was only the effects of excessive blood-letting that were employed.

There



There are several other consequences from the debility that large blood-lettings can induce, that we should be aware of, one particularly to be observed in the case of *pleurisy* and *peripneumony*, (in which disorders blood-letting is most liable to be pushed to excess), there is often a quantity of serous fluid poured out in the cavity of the *bronchia*, that encrease the expectoration, and if at the same time it has a power to weaken the system, so much as that it is unequal to the expectoration, the patient is in consequence suffocated\*.

In persons advanced in life, that have the *catharrhal* disposition more remarkably, we should use blood-letting with caution, and in the case of *rheumatism*, lest by debilitating the system too much, we may make it more liable to be affected with such causes, as may make it continue during life.

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\* See Morgani's Dissections on these disorders.

From these remarks I would not have it thought, that I would recommend blood-letting to be neglected or used too sparingly, (particularly in *phrenetis* and *pulmonic inflammations*), as it is the remedy of all others to be depended on. I only say, that this useful remedy has its limits, but 'tis difficult to say how these limits are to be observed, I think that no general rules are to be given, they must vary in different persons, according to their age, sex, and temperament, as they are more or less plethoric, the obstinacy of the inflammation, and according to the vigor of the system, and habits of blood-letting, all which are to be left to the discretion of the practitioner to judge of. The next evacuation by which the impetus of the blood may be lessened, and the tone of the system diminished is that by

#### P U R G I N G.

T H E hardening of the fæces and the suppression of stools, are certainly owing  
to

to some constriction formed upon the several excretories in the intestinal canal, these, from their not pouring out their unusual fluids the fæces are hardened, and therefore are more liable to be retained, which from their acrimony must very much irritate the system, therefore by giving mild *purgatives* or *emolient* clysters in the course of the inflammation, (provided the belly is not naturally open) we not only obviate the irritation that the fæces may occasion, but in some measure the cause of the suppression of these intestinal secretions.

The opening the extreme vessels every where is a principal remedy; and therefore keeping an open belly, and opening such a number of vessels as open into the intestinal canal, must be a considerable advantage, and an object worthy of our attention, but for these purposes, they are to be conducted properly, without what may be called purging, but the evacuation amounts to more, it is commonly attended

tended with an increased secretion, exhalation, and evacuation of all the excretories, and so an immediate derivation from the arterial system, in both these it is well suited to answer the present indication, by lessening the impetus of the blood. The other means to diminish the blood's impetus are by

#### R E F R I G E R A N T S.

A great variety of different species, are called in our materia medica, refrigerants, but they are not all applicable in the present indication, therefore shall only mention those taken internally, that seem to have a special power in diminishing the heat of the body: as heat is the consequence of the increased motion of the arterial system, so whatever diminishes that heat may be supposed to diminish that motion, the principal of these are *acids* and *neutral salts*.

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O F A C I D S.

IT is universally acknowledged among physicians, that acids have a power in diminishing the heat of the body, by acting directly upon the arterial system, and in this respect are universally employed in all inflammations. In all these cases where there is a heat of the body in consequence of increased impetus in the vessels, the use of *acids* are found to have powerful effects. It is also found from experience that *acids* are the most powerful of the quenchers of thirst, (which suggests not only an appetite for drink, but especially for acid drink,) they diminish the heat of the mouth and fauces, giving some stimulus to the salivary and mucous excretions, whereby they occasion a more copious secretion of fluids, and so are useful in taking off both the heat and dryness upon which the thirst depends, and for obviating the clamminess and dryness of the mouth which so frequently attends

attends inflammations. Their operation still goes further than even this, in the stomach and intestines, where mucous and putrid matters are more liable to abound, nothing is found more immediately powerful in correcting and obviating that putrescency, than the use of acids, they are universally antiseptic, and they may be supposed to exert their antiseptic power, in the mass of blood, as in the alimentary canal. Besides these they have another power, which is common to all saline substances, that is their determination towards the watery secretions of *perspiration* and *urine*, and by this general determination 'tis obvious, that they may be of considerable use, and may be considered as a chief remedy in inflammation. These effects may be obtained from every kind of acids whether *vegetable* or *fossil* that are pure, and not combined with any other substance. The next are the

## N A T U R A L   S A L T S.

THE antients, as well as the modern practitioners hold, that natural salts are powerful *refrigerants*, and their virtues are supposed in the same way as that of the *acids*, from their frequent good effects observed in inflammations, and in all other disorders where it is necessary to diminish the bloods impetus, or the excess of the stimulant power. Their most remarkable effects are their operations on the stomach, in immediately determining the circulation more powerfully towards the surface of the body, and so proving *diaphoretic* and *sudorific*, which is an operation of considerable consequence, further with regard to them 'tis proper to observe, that they are not only *refrigerant* with regard to our mass of fluids, but that they are also antiseptic, and so have the same use as the acids, (which was before taken notice of,) in the *primæ viæ*, but have further this advantage over the acids, that



that they very universally prove laxative, or moderately stimulant to the intestines, to obviate costiveness, and still they are more diuretic than the acids are, and therefore must be very universal remedies in diminishing the increased impetus in inflammations. Before I dismiss this subject, I have a singular fact to mention, and what has been frequently observed. That both neutral salts and acids, the fossil as well as the vegetable, are frequently found to irritate the lungs, they are carried to the mucous glands of the bronchia and very readily excite coughing there, which should caution us with regard to the use of neutral salts or acids, in any pulmonic affections. So much for answering the first indication the diminishing the increased impetus of the vessels. The second indication to remove the *spasm*, that affect the extreme vessels and take off the determination to the inflamed part, by *topical blood-letting*, *warm bathing*, *blisters*, *mild emetics*, *repellants*, and *opiates*, with respect to the first indication ;



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## TOPICAL BLOOD-LETTING.

UNDER the first head, I mentioned that general blood-letting might be pushed to excess, so whenever we are suspicious of that, or that the patients constitution might be injured by large and repeated quantities drawn away, and that the obstinacy of the disease requires a quantity beyond what the system can bear, then we must endeavour to supply this very useful remedy by general venæsection, by topical bloodletting, by *arteriotomy* of the part, *cupping* or *leeches*, which affect the inflamed part more than the whole system, in removing the spasm of the extreme vessels.

From many circumstances I think it pretty evident, that the effects of general blood-letting are generally in proportion to the tone of the arterial system, and therefore unless the tone be encreased by a  
preter-

preternatural quantity of fluids, or the persons being in a phlogystic state, the effects of blood-letting are very inconsiderable, and commonly none at all on topical inflammations, therefore as all local inflammations are but little affected by general blood-lettings, except the inflammatory state is present, in these, topical bleeding is much more effectual.

In all *ophthalmia's* and *phreniti's*, or in every local inflammation, topical blood-letting is by far the most advantageous, and this may be obtained by *arteriotomy*, the opening of a small artery as near the parts inflamed as possible; when the eyes are inflamed, or a phrenetis ensues, we can with great safety open many of the external carotids, which are spread every where upon the temples, nor do I think we should attempt arteriotomy in any case but these, as we can make our bandage secure, being supported by a plate of bone; where this method of drawing blood is used in any other of the soft parts it may  
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be attended with great trouble, in stopping the hemorrhage, which happens in many cases, and if we should obviate this inconvenience, it will be attended with a further, the tight bandage will do as much harm in pressing the uncut vessels, as the evacuation had done service, from this consideration, arteriotomy has of late been less practised in local inflammations of the soft parts. Where inflammations happen in different parts, other means may be employed, by *scarifying* the part, (or as near it as possible,) and drawing the blood by *cupping glasses* great advantage might be obtained; for by opening a number of orifices at once, and suddenly extracting the blood we obtain all the effect of *arteriotomy*, this operation is neither hazardous, nor attended with any considerable trouble; however in many cases this may not be attended with the desired success, and there may be occasion to have recourse to application of *leeches*, which have in certain cases their advantages,

advantages, we can apply them to a considerable number, and produce a sufficiently large evacuation, and have further this advantage over *arteriotomy* or *scarification*, that they can be brought nearer the part affected, as in ophthalmia, or applied to the very inflammation. These are the kinds of venesection which are generally used, and in every local inflammation one ounce of blood drawn in either of these ways, will have more effect in relaxing the parts and removing the spasm, than if the person had lost some pounds in the usual way of blood-letting.

Another external means of taking off the spasm from the inflamed parts, is by

### W A R M B A T H I N G.

I N all external inflammations, except in those of the erysipelatous kind, bathing and fomentations have been very frequently employed. From many doubts there is a strong presumption that this remedy

medy of warm bathing directly applied to the inflamed parts, may encrease the symptoms of the disease. It is allowed that this application acts as an emollient, and that the operation is entirely by relaxing the parts so far as the application can reach. The progress of inflammations is increased by the laxity of the parts easily yielding to the influx of the blood, and accordingly emollients may increase the inflammation by the quantity of the afflux, more than they do service by their relaxation and diminishing of the tone of the vessels, and certainly the heat applied in some measure proves a stimulus to a stronger action of the vessels, as it certainly rarifies the fluids, and gives a greater distension, there is nothing proves this assertion more than in rheumatic cases, the early application of bathing and fomentations manifestly increases the pain, which are the chief symptoms of the disease, and I do think that these emollients, these heating applications, are by no means to be applied to the inflamed parts.

From what has been said, I would not have it doubted but that warm bathing and fomentations are particularly useful in internal inflammations in those of the brain, thoracic, or abdominal viscera, it is particularly well suited to remove the spasm in these parts; for by fomenting the extremities we drive a quantity of blood into the descending parts, which give relief to the brain, and by applying our fomentations as near as we can, to the other internal inflammations, we relax the extreme vessels, and by diverting the blood to the neighbouring parts, we relieve those that are connected with them, as fomentations are analogous to blisters, I shall refer a further explanation under that means, which is our next head.

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### B L I S T E R S.

BLISTERING is a remedy of the most frequent use in inflammations, but a remedy whose theory is difficult,  
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and uncertain, and the practice commonly of a random kind.

A practitioner of rank and authority, says that blistering is of considerable use in inflammations, and will serve the loss of a great deal of blood §. On the other hand a celebrated writer says, there is nothing more remarkable than the stimulating effects of blisters, and therefore declares against them in inflammations †, now as their operation is by no means agreed upon among practitioners, and the consideration is still attended with some difficulty, shall therefore beg leave to offer my opinion on their use in inflammations, and the manner by which they produce their effects.

It has been common to observe that *blisters* were useful in stimulating the sys-

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§ Sir John Pringle's Diseases of the Army.

† Huxham on Fevers.



tem; that they are useful there I allow, but that this depends upon their stimulating is doubtful: it is true they are stimulant during their operation, but the pain they excite, in our sensible and moving fibres is very different in different persons, in some the pain is very exquisite, there is a frequency and hardness of the pulse in consequence of it, and the stimulant effects are very evident. But in many cases the stimulus produces little pain, that is not all communicated to the system, so as not to increase the pulse, or heat of the body; in cases where the stimulus is perceived to be communicated, that only subsists during the operation, the inflammation that attends the blister is over as soon as the effusion of the serum has taken place, and the blister is formed; when the blister is opened and the serum evacuated, the effects entirely disappear\*, so that the whole of their

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\* See Dr. White, on the effects of Cantharides.



virtue can not be placed here. Others have joined to this, or have thought of substituting in its place the evacuation that it produces, but this can not go far; the evacuation which seldom amounts but to a few ounces can not have much effect in inflammations, and the whole that is accumulated in the vesicle, is evacuated from the vessels of the system, in a very slow manner, and only drawn off in the course of a number of hours, this evacuation is not made from the blood vessels strictly so called, but from the ferous vessels, which can not have any considerable effect upon the system, so that very little is to be put to the evacuating operation of blisters. A third opinion is offered, and authors have spoke much of its power in attenuating the lentor of the fluids, and in changing the state and condition of the blood. In some experiments out of the body, cantharides have had the effect of preserving the fluidity of the blood, of preventing its con-

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gelation,

gelation, and 'tis supposed that it operates so in the circulating mass, but neither from theory, or practice can we admit this, from theory, because no medicine can operate upon our bodies in small quantities, 'but by operating upon the nervous system; and from practice we observe that indeed, there are ferments that operate in inconceivable small quantities, but unless it be of the fermentative kind, no medicines does, or ever can produce very considerable changes upon the mixture or consistence of our fluids. In every experiment the effects that we observe are in proportion to the quantity, but a matter of one grain, however diffusible, if diffused thro' the whole mass of blood, can have no remarkable effect, and there is no evidence of its acting upon a particular portion of our fluids.

Nothing is more certain, than that by blistering, cantharides are thrown in, in ve-  
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ry small quantities, for we know that by taking them by the mouth, sometimes half a grain will shew remarkable effects upon the bladder, and in many cases of blistering, we have not these remarks, and so presume, there is not that quantity thrown in, in almost all cases by plentiful dilution, these effects upon the neck of the bladder are quickly worked off, it is therefore to be presumed that cantharides have no effect upon the mixture and consistence of our fluids, and there is no one experiment, or observation that seems to shew it in fact, this kind of theory, therefore, however common I must entirely reject, and must seek for another manner of their operation, which some have called and not improperly an *antispasmodic* power.

Nothing is more evident or more obvious than the stimulating effects of blisters, where they are allowed but to remain for a short space of time, inflammation

mation and a considerable effusion of serum follow and thence the formation of the blister, this is their obvious quality and effect, and accordingly their stimulant effects have been considered as the chief part of their operation upon the particular part to which they are applied, how far the stimulus tho' appearing considerable to the part to which the blister is applied, is communicated as an inflammatory stimulus to the system, is justly disputed.

We have the most decisive proofs that the stimulating effects of blisters are not communicated to the whole system, by their use in inflammatory cases, for in inflammations, nothing can be more pernicious than the applying of universal stimulants to the whole system, which would increase the inflammatory diathesis to a more considerable degree, but this consequence we do not perceive, nay on the contrary, we find, and 'tis agreed that they rather serve to take off the frequency

quency and hardness of the pulse, and to diminish the heat of the body †, therefore their stimulant effects are very local, and in inflammatory cases their effects are never very considerable, but in the neighbourhood of the parts to which they are applied, from this view of the effects of blisters which is exactly agreeable to observation, I do conclude that the stimulant effects of cantharides are little to be noticed, attended to, or apprehended.

While blisters are so useful in inflammatory diseases, and such important remedies, they are especially applicable to those inflammations that are purely internal, and as near to the part affected as we can approach, as in phrenetis, or inflammation of the brain or its membranes, to the hairy scalp, in quinsy, to the neck, in pleurisy and peripneumony, to the different parts of the chest

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† De Haen, Leyden edition, vol. 2, page 42.

where the pain is felt, in the iliac passion, to the abdomen, and in the rheumatism, to the parts affected, and so on in the other internal inflammations, care being taken to remove first the inflammatory diathesis by bleeding, and if the blister should not give relief bleeding should be repeated.

Blisters should never be applied directly to the inflamed part itself, as they have the same effects in every respect as warm fomentations and other such warm applications, in relaxing the vessels on the parts to which they are applied, they produce a greater determination of fluids there, which must support the spasm on which the inflammation depends; therefore these applications of *blisters* and *warm fomentations* plainly appear to operate by relaxing the parts, (and as there is no doubt now subsisting of the communication

nication of the several parts of the skin, the relaxation of any part may be communicated to the whole circulating system (from connections established to suit the purposes of the animal economy), 'tis manifest that they remove the tension and spasm which is the principal circumstance in the support of the inflammation. We have a decisive proof of their operation in the case of rheumatism, where they are so useful in removing the local pains, for the same pains are often removed by an operation of nature, which is, the incumbent skin and cellular texture of the surrounding part are affected by a considerable swelling from an increased exhalation, or effusion, into the cellular texture, and 'tis by an effusion produced in the same manner between the skin and cuticle, that blisters certainly act. This is an explanation, which I shall offer of the theory of blisters, and I imagine that it is consistent with every observation,

observation, and will explain their operation so far as is necessary, the next means of removing the spasm is by mild emetics.

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### BY E M E T I C S.

THE operation of emetic medicines is in two ways, first, by exciting full vomiting, and secondly, they may be employed in small doses, to produce some degree of sickness and nausea, without vomiting, or at least very little, and that not encouraged in the ordinary way, the effects of either of which are to determine the circulation very strongly to the surface of the body, this we perceive from the sweating which accompanies vomiting, that the action of vomiting is fitted to this determination we see, as nature in the formation of inflammations, so frequently employs vomiting to overcome the spasm that is forming in the vessels



vessels of the inflamed parts. 'Tis now observed that the same effects will be produced, without any vomiting at all, that a determination to the surface will be produced by giving the emetics in small and repeated doses sufficient to create a degree of sickness or nausea, therefore 'tis truly the operation of the emetic medicine upon the stomach, independent of the full vomiting that may follow. With respect to the whole of these facts of emetics, I shall consider in what case full vomiting or nauseating doses are to be employed.

When the contents of the stomach are to be evacuated, and that it is apprehended the various contents become fetid, then full vomiting is more or less indicated, as these may become a stimulus to the system, or when there are accumulations or congestions forming in the various abdominal viscera, vomiting by exciting the action of these, will be of service,

vice, and their effects obviated. But if it is supposed that the stomach or any of the contiguous viscera, have a tendency to inflammation, the exercise of vomiting may be a considerable aggravation of this, and further I must say, that full vomiting cannot be repeated, with the advantage we have in view, (by determining to the surface of the body, and promoting sweat,) its effects this way can not be very permanent, as 'tis over as soon as the vomiting ceases, and the exercise is attended with considerable fatigue, and therefore debility follows.

That the connection between the stomach and skin is very evident, and on many occasions is proved. We have a remarkable instance of this connection from Sydenham, he says \*, “ that in the  
“ cure of the plague and pestilential fever,

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\* See Swan's Sydenham, page 89.

“ when

“ when the stomach was so affected, as  
“ to reject every thing given, he never  
“ could get his medicines to remain, till  
“ such time as he could get the sweat to  
“ flow, and when that happened, the  
“ most nauseous ones were retained.” So  
that the state of the skin has evidently a  
connection with the state of the stomach,  
and on the other hand, there are many  
other obvious and probable proofs, that  
the stomach has a considerable influence  
upon the state of the skin, that certain  
matters thrown into the stomach will shew  
these effects there instantaneously.

In these diseases, when full vomiting  
from the causes already mentioned ; are  
dubious and unsafe remedies, and can not  
be depended on, for continuing the pro-  
per determination to the surface, in order  
to remove the spasm, that supports the  
particular inflammation, we will find our  
purpose effectually obtained, by nauseating  
doses,

doses, by giving our emetics in small quantities and at such intervals as will promote a nausea and sickness without coming to vomiting, or encouraging it in the usual way by warm liquors, as the operation depends upon the stomach we have its effects longer continued, and the determination to the surface much more regular and steady. Another advantage from our nauseating doses, a portion of them, while they continue in the stomach is considerably dissolved and washed over the pylorus, by which means it certainly proves purgative, whereas by full vomiting the whole of the emetic is perhaps ejected by the mouth. By this means it more effectually obviates the congestions that take place here, by opening a greater number of the excretories that open into the intestinal canal, and by operating here, it is not without some determination, also to the surface of the body.

With

With regard to the various kinds that may be employed to answer this very useful application, the effects do not belong to the nature of any one particular emetic, to the preparations of antimony more than others, but every emetic medicine has more or less a tendency to answer the same purpose, whether *Squills*, *Ipecacuana*, the preparations of *Antimony*, as *Kermes Minerale*, *James's Powders*, *Antimonial Wine*, or *Tartar Emetic*. Our next head, to remove the *spasm* of the extreme vessels and take off the determination from the inflamed parts, are by

## R E P E L L E N T S.

IN external inflammations, the antients universally and many of the modern practitioners, constantly proposed as their first practice, the application of repellents, which are chiefly refrigerants, and many of these being astringents, are on that principle repellents.

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I have before mentioned that *acids* and *neutral salts*, may be employed internally, as having a considerable effect in diminishing the tone and increased impetus of the system, and therefore are very properly used in all inflammations, the consideration of these internal refrigerants leads me in this place to speak a little of their external use.

Besides the *acids* and *neutral salts* in internal inflammations, other refrigerants have been used externally to the inflamed part in different forms, and not without its advantage, the most powerful and most remarkable are taken from the preparations of *lead*. It is supposed that other metallic substances afford a refrigerant power, as *copper*, *iron* &c. but, the preparations of lead, and particularly the *saccharum saturni*, or sugar of lead, are the most regarded in the  
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external applications to inflammations, which was an early practice, but of late has been much more frequently employed, every one knows that all the saline preparations of metals are soluble, and more or less astringent, if astringent they must be more or less *sedative*.

The circumstances of inflammations and tumor, very often seems to depend upon a certain laxity, or to an easy yielding of the vessels of the part, (from various circumstances) which is moderated by the application of astringents, in such inflammations they have their use, but we can not see how they have any effect upon the spasm, that we suppose takes place here. As astringents, they can be of no use, must seek for their operation on another principle.

Practitioners were very much divided about the application of astringents in  
inflamm-

inflammations, but of late they have changed their opinion, and the use of saccharum saturni, and other astringents, are become favourite remedies in external inflammations.

The operation of this, as well as other saline and spirituous medicines, operating as astringents is to be doubted; their effects are plainly a *sedative* power that is communicated to the moving fibres of the vessels, and this power by lessening their tone, may contribute to diminish their action, the impetus of the fluids in the inflamed parts, that this is really their operation and the effects that are obtained from them, may be concluded from hence, that it is universally acknowledged that the indiscreet use of *repellants astringents* or *refrigerants* (for these are synonymous) are liable to produce gangrene in the part to which they are applied, which can be by no other way, than from  
their



their being sedative, by destroying the *tone* of the part, and therefore these effects are a proof of their *sedative power*; our next, and last remedy to remove the spasm of the inflamed parts is by

## O P I A T E S.

With regard to opium it seems to be very universally established in the judgment of practitioners, that it is hurtful in all inflammatory diseases, and therefore is not at all admissible, where there has been, or still remains any suspicion of the inflammatory state. As all general rules are fallacious, we are too apt, suddenly to take up a system and adhere to it, without considering upon what principles such is founded in fact.

I infer from a practice, that is frequently pursued, that opium is not so mischievous a remedy as has been alledged; that

that is, in the case of acute rheumatism, (which is allowed to be purely inflammatory,) by Dover's Powders, where there was no doubt of the inflammatory state still subsisting to a considerable degree, that sweating conducted by these, proves a certain remedy, and when given upon proper occasions, is the most certain means of terminating speedily this disease, which is otherwise so tedious.

From my own experience and observations on opium in practice (which is perhaps one of the most universal remedies that medicine is possessed of) I never perceived its ill effects in inflammations, on the contrary, I have always observed that its exhibition, when properly applied was frequently attended with remarkable advantage. I have in many cases of pleurisy and peripneumony, and in different stages of these diseases administered opiates, (not neglecting the anti-phlogistic

phlogystic regimen) generally with success, I have observed that it, not only in those disorders relieves the cough which is so troublesome, but also alleviates the pain, and softens the hardness of the pulse, by which we judge of the solution of the spasm. A further advantage is obtained from these remedies in pulmonic or catarrhal inflammations, as expectorants, nature has given a peculiar sensibility to the exterior glottis and the other parts of the mucous membrane adjoining it, in order to guard against the falling in of any matter whatever into the trachea, which we immediately reject by coughing, now we know that various acrid matters are frequently passing over these sensible parts, tho' they do not always affect it, for nature has provided the mucous glands, with a viscid matter that comes from these serves to cover the sensible membrane from the irritation of these acrids, now in catarrhal affections, and in a coryza of the lungs, when these glands pour out their fluids

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as soon as secreted, in a thin, acrid and volatile state, a cough frequently arises, and 'tis plain that the fluids poured out in these diseases, from the frequent constant cough are of this nature, in order to produce expectoration, the fluids thus poured out when in this state of acrimony, must have time to stagnate in the follicles, and there acquire a more gross consistence, and whatever obviates the frequency of the cough, will allow of this stagnation, and therefore will occasion the production of mucous, to answer this intention no means is more effectual than the use of *opium*.

I have given opiates in many other topical inflammations attended with excessive pain, and the inflammatory state much prevailing, and I have in the general seen it attended with advantage, nor do I see on what principle practitioners are so averse to their use in every inflammation, where  
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there is great sensibility and pain, and where the system is very irritable, had the qualities of it been properly attended to, the prejudices would be in a great measure removed, 'tis universally supposed that opium is a combination of the two powers of *sedative* and *stimulant*, the former of these it possesses in a high degree, even to the extinction of life itself, but the latter, is by no means proved from any experiment or observation whatever, on the contrary, its effect on the human body shews it, to possess an antispasmodic power in a high degree, and one of the most considerable that we employ.

Sydenham long since, from his sagacity, and unremitting diligence in observing nature's progress, remarks the good effects of opiates, in inflammatory diseases†,

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† See Swan's Sydenham from p. 112 to p. 119.

in a very clear and satisfactory manner, and the present practice of the Vienna physicians give facts to the same purpose †.

These are proofs that opiates, do not always do mischief in inflammatory diseases as has been imagined, nor that it possesses the stimulant power as is generally supposed, for from what we see of its operation on the animal system, we observe its effects to be purely *sedative* and *antispasmodic* from its opening every secretion, (the alimentary canal alone excepted) and from its rendering the pulse remarkably slow, soft, and regular, from being before full, hard and tense, by these appearances there is no doubt left, but that by its relaxing the surface and promoting sweat, by its removing the

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† De Haen vol. i. p. 12. Storck's Annuus Medicus  
for 1759.

tension of the mucous glands, and encreasing the saliva \*, and determining in a particular manner to the urinary passages, that it must be as powerful a remedy in inflammations, as we employ, and upon this account it should have the first place, especially as it diminishes every irritation that had been applied to the heart and arteries with certainty and safety.

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\* Swan's Sydenham, page 118.





# EXPLANATION

OF

T E R M S

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A.

*ANTISPASMODIC*, Medicines against violent contractions of the fibres.

*Arteriotomy*, The opening of an artery.

*Articular*, Of or belonging to the joints.

*Anastimosis*, Is an opening of veins and arteries into each other.

*Aneurisms*, Swellings of the arteries.

*Atonia*, A loss of strength.

*Anasarca*, A dropsy.

*Antiphlogistic*,

## EXPLANATION OF TERMS.

*Antiphlogistic Regimen*, Is the use of diet, drink, &c and the avoiding impressions, which resist inflammation.

*Alkalescency*, Substances which produce an acid, sharp, and pungent salt, which ferments with acids.

*Antiseptic*, Medicines which resist putrefaction.

### B.

*Bronchia*, The wind-pipe and its several branches thro' the lungs.

### C.

*Cutaneous*, belonging to the skin or surface of the body.

*Coryza* and *Catarrh*, Is when a defluxion of a thin, acrid humour is discharged from the mouth, jaws, throat, lungs, &c. by

## EXPLANATION OF TERMS.

&c. by cold, attended with a troublesome cough.

### D.

*Diluent*, Such drinks as thin the blood.

*Diaphoretic*, Moderate perspiration.

*Diuretic*, Medicines which promote urine.

*Debility*, Weakness.

### E.

*Ecchymosis*, Spots on the skin from an extravasation of blood.

*Erysipelas*, Swellings in the skin, red, attended with heat and a pricking pain, called St. Anthony's fire.

*Excretories*, Are the outlets by which the different secreted fluids are thrown out of the circulation.

*Farinaceous*,

## EXPLANATION OF TERMS.

### F.

*Farinaceous*, Belonging to the meal or flour of corn.

*Fossil Acids*, Are those extracted from fossil substances, as spirit of vitriol, spirit of nitre, spirit of sea salt, &c.

*Follicles*, Small ducts, which receive the humours discharged from the glands.

### G.

*Glottis*, The upper part of the wind-pipe.

### H.

*Hypochondriasis*, A lowness of spirits.

*Hemorrhagies*, Are effusions of blood from cut or ruptured vessels.

*Homogeneous*, Parts like one another.

*Hypothesis*,

## EXPLANATION OF TERMS.

*Hypothesis*, A supposition of a thing.

*Hemorrhoidal Vessels*, The bleeding piles.

### I.

*Intestinal Canal*, The guts.

### L.

*Lentor*, Sizy or glewey.

### N.

*Neutral Salts*, Are those which are composed of acids and alkalies, in such proportions as render the salt mild, such as nitre, sea salt, &c.

### O.

*Ophthalmia*, An inflammation of the eye.

*Odema*, Soft insensible swellings, which yield to the pressure of the finger.

### I

*Phlegmon*,

## EXPLANATION OF TERMS

### P.

*Phlegmon*, Inflammation on the surface of the body.

*Proximate Cause*, The first cause.

*Phlogistic Diathesis*, The inflammatory state of the body.

*Plethora*, Is when the vessels are over filled with blood.

*Phenomena*, Appearances.

*Phrenitis*, An inflammation of the brain.

*Pulmonic*, belonging to the lungs.

*Pylorus*, The lower orifice of the stomach, where it joins the first of the small guts.

### R.

*Rubifacientia*, Medicines which make the parts red, to which they are applied, or raise small blisters.

*Refrigerants*,

*Refrigerants*, Cooling medicines.

*Repellants*, Medicines which drive the humours another way.

S.

*System*, The frame and structure of the body, or its parts.

*Sistole*, Is the contraction of the heart, by which the blood is forced into the arteries.

*Spasms*, Are a state of contractions in which the fibres do not easily yield to the extending powers applied.

*Sedative*, Destruction of sensation.

T.

*Tonsils*, Glands of the throat.

*Topical*, Any particular part.

*Theory*, Speculation.

*Trachea*, The wind pipe.

*Visceral*

EXPLANATION OF TERMS.

U.

*Visceral*, Belonging to the different bowels.

*Vis Medicatrix Naturæ*, The efforts of nature to throw off what may hurt or destroy itself.

THE END.







3:8:3

4:11:

2:5:6

11:4:5

3:8:3

1:2:9

3:8:3

8:15:4

